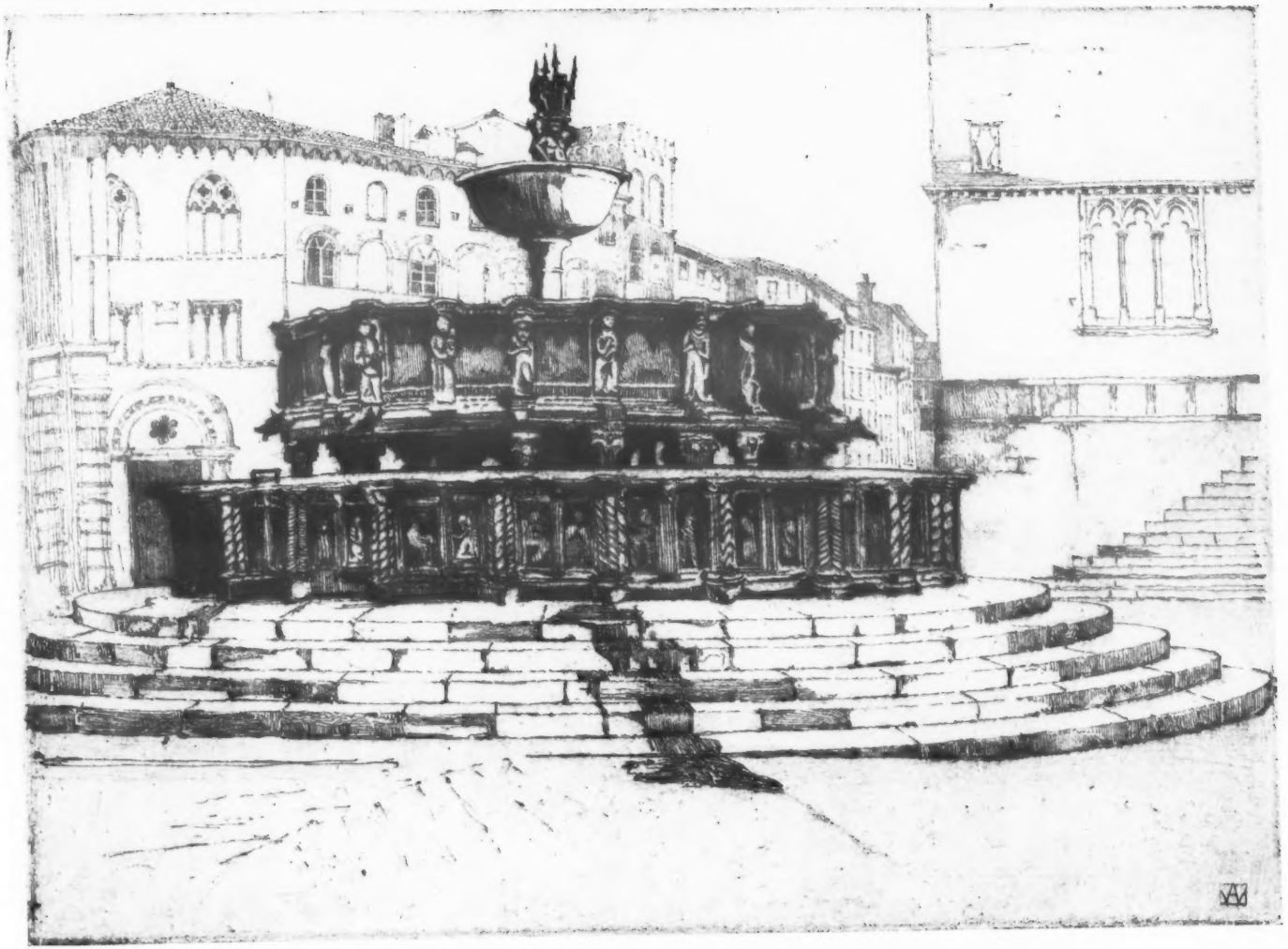
Journal of the Royal Institute of British Architects

THIRD SERIES

VOL. XXXVII. No. 3 — 7 DECEMBER 1929

Contents for 7 December 1929



La Fontana Maggiore, Perugia
From an Etching by W. H. Ansell [*F.*]

VOL. XXXVII. No. 3 7 DECEMBER 1929

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE: FRONT ELEVATION

The Design of Science Buildings

BY ALAN E. MUNBY, M.A. CANTAB. [*F.*].

[*Read before the Royal Institute of British Architects on Monday*, 18 *November* 1929.]

THE design of science buildings presents so wide a field for discussion that I have found it difficult to decide upon the most useful way of presenting the subject in the short time at disposal, and the difficulty is not reduced by the fact that at least five-and-twenty years seem to have elapsed since this topic in any general sense came before you. After a few introductory comments on the claims of science I propose to say something upon the classes of science buildings and general points in reference to design, then to deal with the special requirements of three fundamental sciences, followed by a short account of their fittings in lecture rooms and laboratories. A few words on accessory rooms and service supplies will be followed by some distinctions between teaching and research institutions. A third of my slides will illustrate, and I hope relieve, the technicalities of the paper, the remainder will be shown at the end as examples of specific buildings.

The progress of modern civilisation is mainly due to the work of the scientist, in fact it would not be easy to find any material benefit which has prolonged life, or by improving the condition of humanity has given opportunities for mental development, which has not initially sprung from the laboratory. To refer to a few recent instances only, work on metallic alloys has alone rendered many engineering developments possible, biological research has conferred immense benefits on medicine, animal life, and agriculture—benefits which will greatly increase in the near future, while chemistry has recently produced rayon, or artificial silk, which already employs 300,000 workers in this country. Apart from practical issues we have of course the great educational value of science, taught nowadays with a broad conception linking it with the humanities.

These facts admitted, it is somewhat astonishing that as a nation we take so supine a view of the scientist and his work.

We have only a small band of politicians who know anything about science, nor does the public at large display any interest in it; but there is no doubt whatever that though our national wealth

and initiative have in the past kept us in the forefront of the world, failure to appreciate the claims of science is going to relegate us to a secondary position among the nations in the next half century.

When we look at the picture which shows a design for a general laboratory less than a century ago we may feel inclined to congratulate ourselves on our advance, but we cannot afford to cry halt until the spirit of science has permeated all our industries.

Our purpose to-night is to consider how the material requirements of the scientist can best be met, and economy demands that they be met in the most efficient manner. It is often forgotten that capital expenditure is only current expenditure at market rate of interest, and if such interest be added to the cost of running a building the difference in annual charges between building well and parsimoniously will be found to be remarkably small, allowing nothing for increased efficiency obtained for a generous expenditure of capital. I do not refer to lavish architectural adornment, but to technical completeness; and while no architect should be asked to erect a building devoid of character, the scientist often complains with justice of outlay in elaboration of detail which he would rather have expended on his apparatus.

Science buildings may have a purely educational purpose, as in a school or university, or may be devoted to research which may embrace a variety of subjects, or be confined to some special work. Again, many buildings have to combine these functions, while some of our technical schools have also to include training in crafts which involve trade equipment outside our discussion. In considering branches of science it should always be remembered that there is no real division of nature into compartments; such groupings as exist are merely a matter of convenience, and though fairly sharp lines of demarcation may be drawn for elementary work, in advanced and in research work these divisions tend towards fusion. Thus, though elementary chemistry, physics, and biology present defined boundaries as regards material equipment, such subjects as bacteriology, pharmacology, and histology embrace the former subjects, demanding similar laboratory equipment, with refinements and extensions for their special spheres of work.

One of the great difficulties of the architect lies in the absence of any consensus of opinion on the part of educationists and scientists as to the appropriate equipment for specific subjects, and it not infrequently happens that conscientious efforts to provide what is asked for excite considerable criticism of the design by a successor in charge of a department. I have more than once suggested to men of science that they might well get together and formulate some outline of requirements for particular subjects and grades of work, which I think could be done without hindering development. This suggestion has not met with any response, the answer being that everyone has his own special ideas, but the scientist is apt to forget that he is often promoted to some higher sphere while his building has to remain with any special foible visited on the architect as his shortcoming. As things stand we must as a profession generally find out what our scientist wants and reconcile it with the funds at our disposal, and it must be admitted that most scientists are prepared to take a great deal of trouble in formulating their requirements. I cherish the remark of a professor to myself that he would much rather have an architect who knew nothing about science buildings than one who thought he knew something. Notwithstanding this generous measure of help from clients, occasions often arise upon which an architect has to advise a lay committee, and it is then that technical knowledge is essential for a successful outcome.

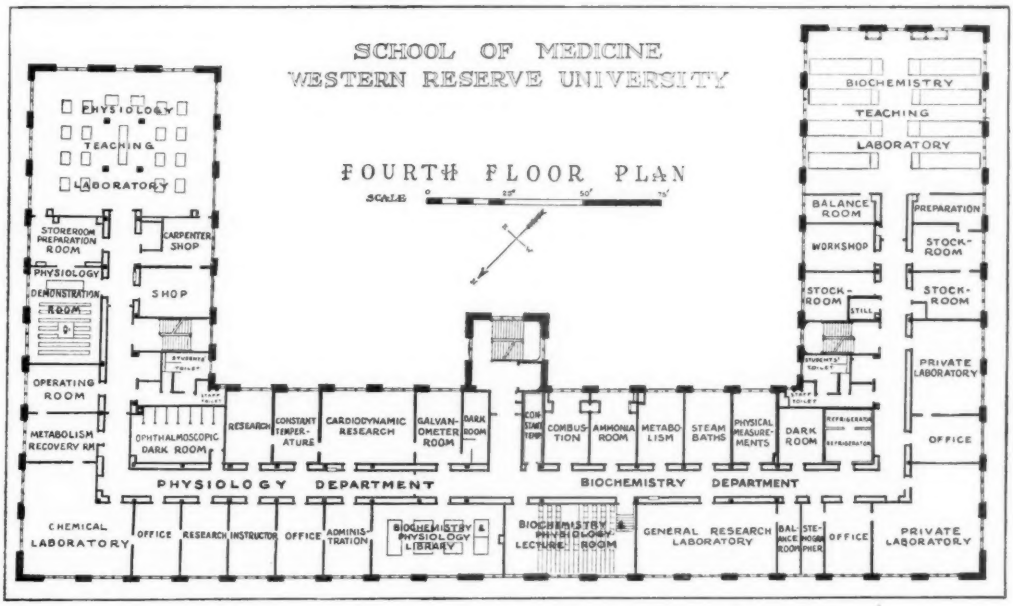
To consider a few generalisations before dealing with specific subjects, a symmetrical plan should be aimed at, departments being balanced as far as possible with regard to the central location of any rooms which may have to be used in common.

In large buildings the adoption of a unit will often simplify construction and assist in the allocation of space. For example a 12 foot frontage in rooms say 18 feet deep might be taken. With such a unit it is possible to obtain a rapid mental picture of space allocation to different subjects in the early stages of planning. As changes are inevitable as much elasticity as possible should be obtained by the use of partitions which are not constructional. The solidity of walls forming small rooms in many old buildings prove a great embarrassment when alterations are projected, and who can foresee the laboratory of fifty years hence. On this subject of changes I once heard the late Headmaster of Oundle School say at a meeting of rather cautious educationists that in his opinion every year the whole of the science apparatus

should be taken into the playground and publicly burnt. This was his incisive manner of acclaiming progress. On the other hand I have some sympathy with the Irishman who, told to arrange his building for future generations, replied petulantly that posterity had never done anything for him, and like most things in life laboratory construction must be a compromise. Such things as floor drainage, ventilation flues, and supply services must

tion, and may determine the layout of horizontal steelwork, hence these requirements must be visualised very early.

The provision of vertical shafts and false ceilings over corridors much assists the grouping of pipes, which may reach a very considerable aggregate sectional area. Though personally I consider that general ventilation systems should be discarded whenever possible in favour of opening windows,



WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE: FOURTH FLOOR PLAN
This building forms a good example of the use of the unit system on a large scale
For this illustration and the illustration on page 75 the writer has to thank the Rockefeller Foundation

obviously be of a permanent character, often to be sacrificed in any subsequent radical alterations.

Good natural lighting is most essential, and in climates which are not tropical hardly too much window area can be provided. The height of working rooms should be generous both to provide good light and ensure a fresh atmosphere. In noisy situations lecture rooms should be given the quietest aspects. Orientation is of great importance for certain subjects; many biological experiments, for example, require a steady light between east and north. The special services required in science buildings in the matter of floor drains, flues, and service pipes often vitally affect construc-

certain fittings always require special ventilation, and any trunking involved, which may reach some magnitude, should be visualised before contract drawings are completed. While too much stress is generally laid upon the subject of vibration, for certain kinds of work in situations surrounded by traffic special structural features may have to be incorporated.

To summarise, the designer must realise that it is not enough to produce a good plan giving the accommodation sought and to leave technical requirements to be dealt with later. The whole design must grow up together and the fixed fittings must be laid out on the plans suitably spaced

at a stage to prevent the embarrassment of the general contractor by subsequent changes.

I propose now to deal with the requirements of physics, chemistry, and biology, the basic trio from which all advanced work is developed.

Physics, besides its lecture rooms and laboratories, requires good storage for valuable apparatus, much of which is often housed in the working rooms.

usually gas supply when compared with chemistry, but electric power often involves a large and complex system. Little artificial ventilation is wanted, but dark rooms should always have an air current. The requirements of most instruments affected by vibration can be met by the building into walls of small corbel stone shelves, preferably near cross wall intersections. Moving machinery, particularly of the reciprocating type, should be

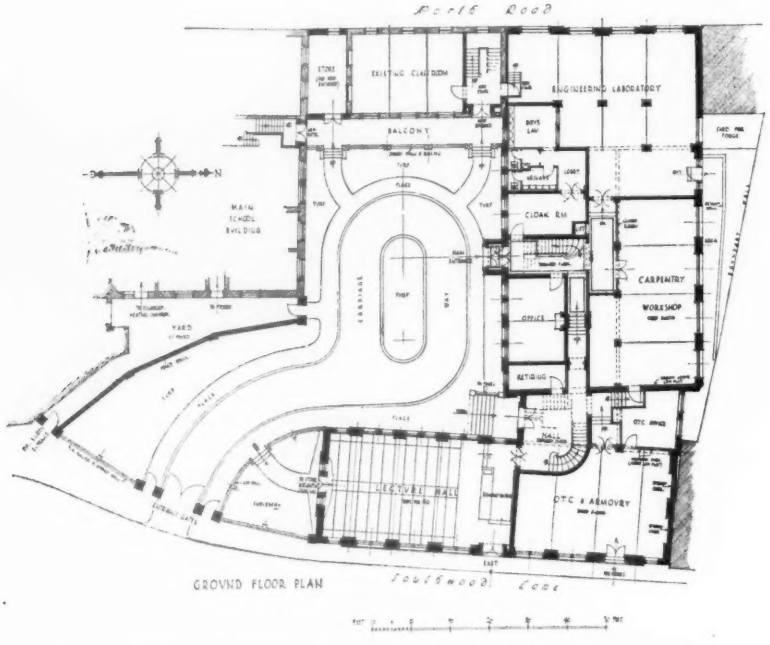


FIG. 3.—HIGHGATE SCHOOL: GROUND PLAN OF NEW SCIENCE BUILDINGS
The upper floors are devoted to physics, chemistry and biology
The scheme incorporates older buildings to form a court with a new road access

Less is wanted in the way of preparation rooms than in other subjects, but more in mechanical equipment; a workshop for repairs and making apparatus is required, which in a large scheme may contain a good many machines.

Electrical work often demands a special suite of rooms for high tension experiments, batteries, and distribution boards. Facilities for darkening rooms by blinds are particularly necessary for physics, hence roof lights, which present some difficulties in this respect, should be used sparingly. Water and drainage requirements are small, as is

divorced from a physics department as much as possible. Wood blocks or narrow tongued boards on solid floors give a good working surface, cork slabs form a very pleasant and durable surface for research rooms, asphalt is suitable for battery rooms, stores and the like, and even cement is quite suitable for stores, though tiring to the feet.

Chemistry demands more in the way of preparation rooms, washing up rooms, and dispensaries, and much space for light glass and chemicals, some of which require special accommodation as being dangerous. The supply services for this science

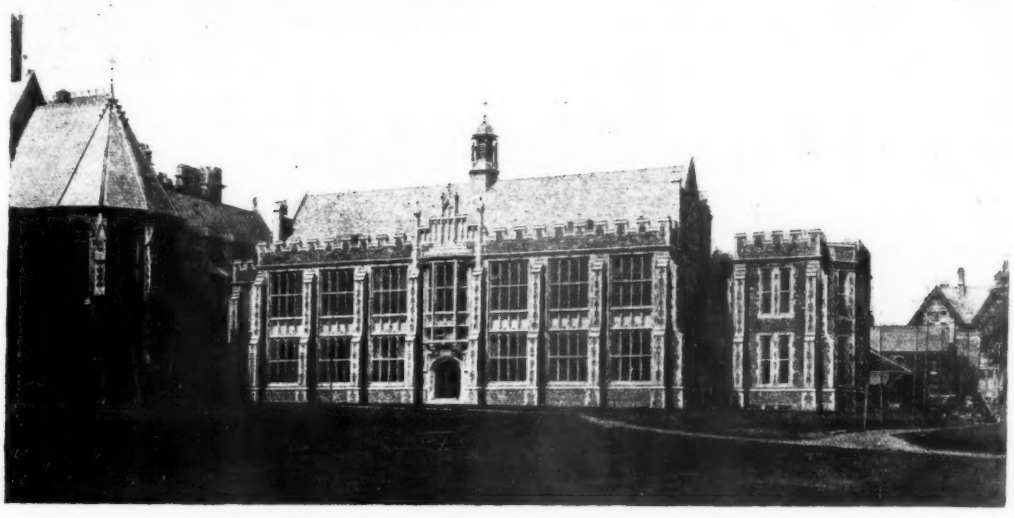


FIG. 4.—CLIFTON COLLEGE: ELEVATION TO CLOSE OF CHEMICAL DEPARTMENT OF NEW BUILDINGS, WITH CHAPEL ON THE LEFT

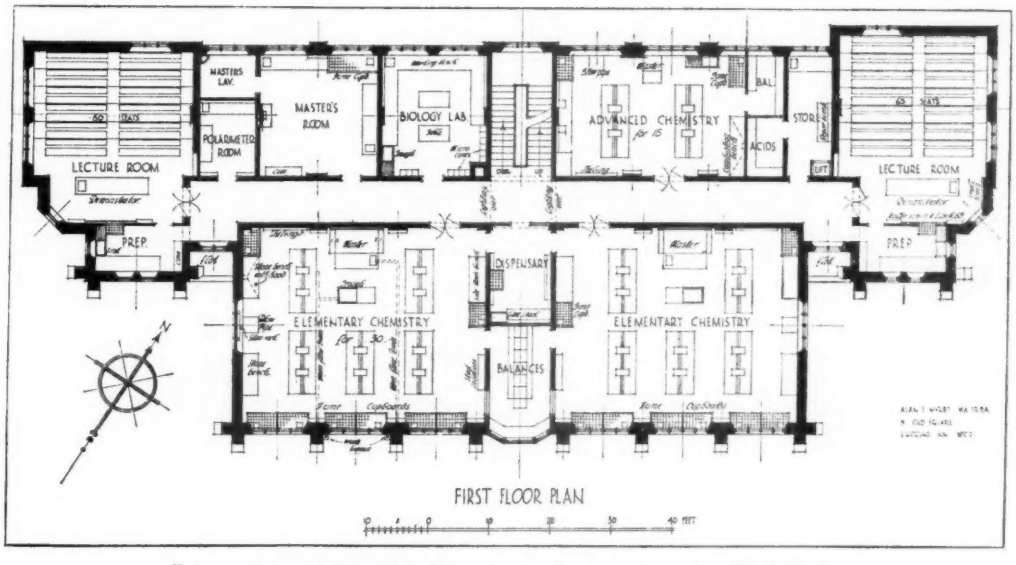


FIG. 5.—CLIFTON COLLEGE: FIRST FLOOR PLAN OF CHEMICAL DEPARTMENT

are great. Drainage is complex, calls on gas and water considerable, while steam, vacuum, and other special services are often called for. The arrangements for electric power are generally confined to a few rooms.

All chemical laboratories require several cupboards involving special flues operated by fans or gas jets. All working rooms get hard wear, and wood blocks or narrow boards make the best floor surface. Acids frequently spilt attack cement and all forms of marble, while caustic liquids readily damage linoleum.

Biology embraces botany and zoology, and both subjects draw upon chemistry and physics in advanced work. This science has recently much enlarged its boundaries owing to research. For elementary work equipment is simple, both in fittings and services, apart from museums, often elaborate and costly. Storage, however, should be ample, and space provided for the setting up of specimens, while plenty of shelving and cupboard space is necessary. Animal dissections are usually on a small scale, such work on the human body being generally relegated to hospital practice, but requirements which may greatly vary the character of a building should be ascertained. The necessity for a steady light has been referred to, the microscope being in constant use, and though the tendency is to employ artificial light even by day, the breaking up of windows into small panes should be avoided as being very annoying for such optical work.

Water and gas requirements are small, and such electric power as is necessary is of small amperage. For advanced work, however, special rooms highly insulated for constant temperature work, for incubators, centrifuge and other plant, are necessary, while a refrigerating circulation is required for the preservation or freezing of material to be dealt with. Though fume cupboards are little called for, hoods for smoking drums and like uses may involve special flues. Whereas physics and chemistry benches in general laboratories should have a cross light, such benches in a biological department should face the windows.

We can now turn to some specific fittings which require special design, and in this connection again it will be found useful to cultivate the unit idea in dealing with advanced work. If a standard bench be worked out to requirements for a specific subject, this will probably be found capable of considerable repetition, decreasing cost and admitting of some useful interchanges as work in a building develops. This applies particularly to the underworks of benches in the matter of drawers and lockers, which may often advantageously be made separately from bench tops, this conferring considerable elasticity upon the fittings of a room.

Taking first lecture theatres generally. Lecture tables differ much in elaboration, for geology and botany sometimes a plain table is considered sufficient; usually, however, and invariably for physics and chemistry, drawers and lockers are provided on the lecturer's side. A long cupboard for a lantern is useful, very shallow drawers for microscope slides, and a few small locked drawers for valuables; but some open area is usual in the centre as knee space and to hold tall apparatus. The front of the table may be merely panelled or provide shelves or shallow cases for specimens. Usually 3 feet high and 3 feet wide, lecture tables may be any length from say 12 feet upwards—one could be cited 60 feet long.

Teak still forms the best material for the top, but sometimes a part is in tiles or stone for experiments involving much heat. Two sinks are generally the maximum, one at each end either in or outside the table. Services may range from nothing for geology and botany to every kind of supply.

All lecture rooms should have dark blinds of rubber-proofed cloth sliding in casings with checks to prevent overrunning. They require consideration in reference to window gear, and I have recently used some in two halves, one to pull up, the other down, with a good overlap and slight space between to admit air from open windows, which otherwise often results in blinds being blown out of their casings.

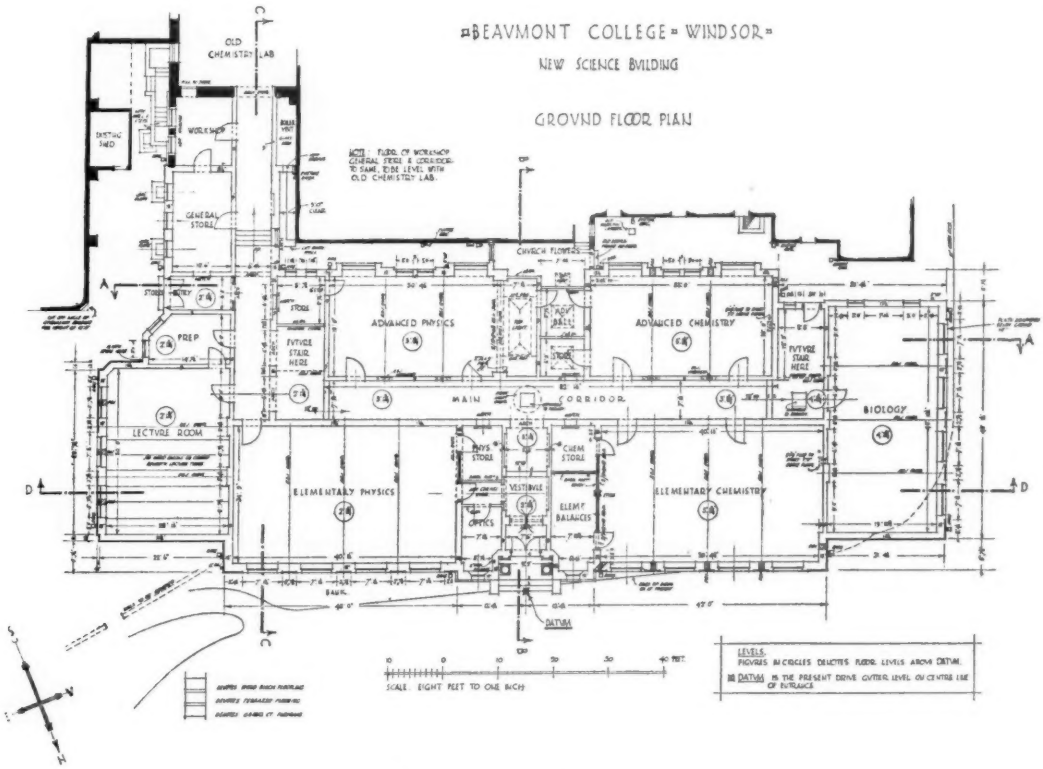
Seating takes various forms, but comfort should be studied. Seats should slope up to the front to throw part of the body weight on to the thighs, and should have a back rail below the shoulder blades and a strong foot rail to the desks. Raised staging in graduated heights should be provided unless the floor of the room has to be cleared for other purposes, but the steep pitch of the older lecture rooms is now seldom adopted. For continuous desks 2 feet per place as a minimum gives writing space. Many lecture rooms, particularly in schools are much larger than necessary, using space needed for laboratories.

Physical laboratories in small composite schemes

generally occupy a ground floor but sometimes economy in drainage and the possibility of longer flues may result in putting chemistry on the ground and physics over it, and with modern construction there is little objection to such an arrangement. For schools the Board of Education allows 30 square feet a head in laboratories, but it will be found rather difficult to produce satisfactory conditions with this minimum in all subjects. Small strongly framed tables 12 to 18 feet super, at right angles to the window wall, with 4 feet gangways, make the best arrangement, but take more space than continuous benches for a given number. These tables, usually 3 feet high, should have no drawers or lockers unless such space must be used for general storage. Not subject to much hard wear, teak tops are not a necessity.

One or two large sinks with draining boards are usually enough in a general laboratory. A demonstration table—a lecture table in miniature—on a low platform, is usual in schools. Balances are quite suitably housed in a physics laboratory on strong shelves, often in the windows, where they must be considered with respect to dark blinds required. Stone corbel shelves have been referred to, and are required for galvanometers, and a few large glazed cases may complete the equipment. Gas and electricity, usually wanted on island tables, should be brought up through floor trenches to fittings with detachable connections. The use of brass or copper for service pipes and radiators near positions required for magnetic experiments merits consideration.

Chemical laboratories require benches with sinks



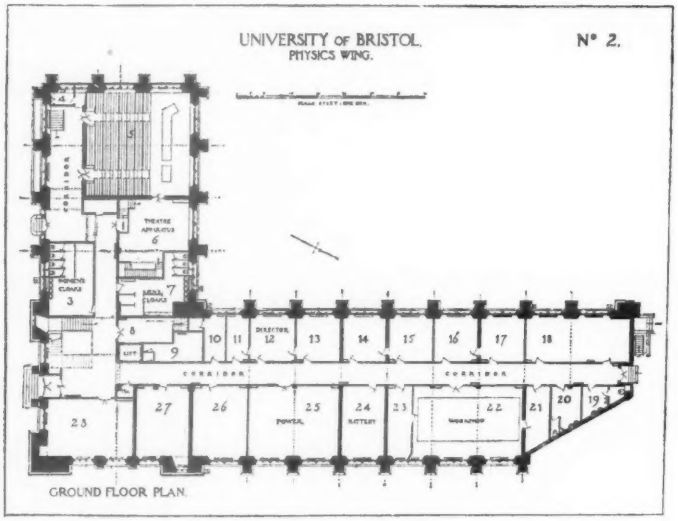
BUILDINGS IN PROGRESS FOR BEAUMONT COLLEGE, WINDSOR
The small stores attached to the laboratories will be noticed

available for every worker without leaving his place, as water is in continual use. Each student usually has his own set of apparatus, which involves a drawer and locker under his working place. For elementary work 3 ft. 6 in. bench length is almost universal in different countries, and to meet the needs of alternative sets of students possibly three sets of lockers may be required under such a bench length in schools. Requirements, which may much affect administration, should be ascertained.

Racks for bottles, best of glass, suitably supported, should be as few as possible, though for advanced work two or three tiers may be demanded. Their reduction improves the appearance of the laboratory and aids supervision. Teak forms the best bench top. African mahogany has been used in several recent buildings, impregnated with aniline black, but this gives no reflection and is rather depressing in appearance.

Fume cupboards, which should be plentiful, require consideration. In a general laboratory they should be large and well lighted, and may be placed in the windows with tops finishing at transoms.

Glazed all sides, about 6 feet long and 2 feet 6 inches deep, the base is best of hard semi-glazed tiles on concrete. The front sash should throw up 2 feet 6 inches. Usually a sink or drain channel is required in these cupboards. Ventilation may be effected by gas, in which case each cupboard has its separate flue, or by fans connected to a trunking system best made in asbestos cement, though steel, lead coated, finds some use and is light. Though a group of cupboards may be profitably operated by a single fan, I am not in favour of large central systems operating several rooms, which involve large trunks and great waste of power when limited use of the cupboards occurs.



UNIVERSITY OF BRISTOL: NEW PHYSICS BUILDINGS. Architects: Messrs. Oatley and Lawrence
Key.—Senior Theatre, 5; Private or small Research Rooms, 10, 11, 12, 13, 14, 15, 16, 17; Other Research Rooms, 18, 26, 27, 28; Photographic Dark Room, 9; Workshop and Power, 22, 23, 24, 25; Stores, 8, 21; Apparatus, 6; Cloaks, 3, 4, 7, 19, 20.

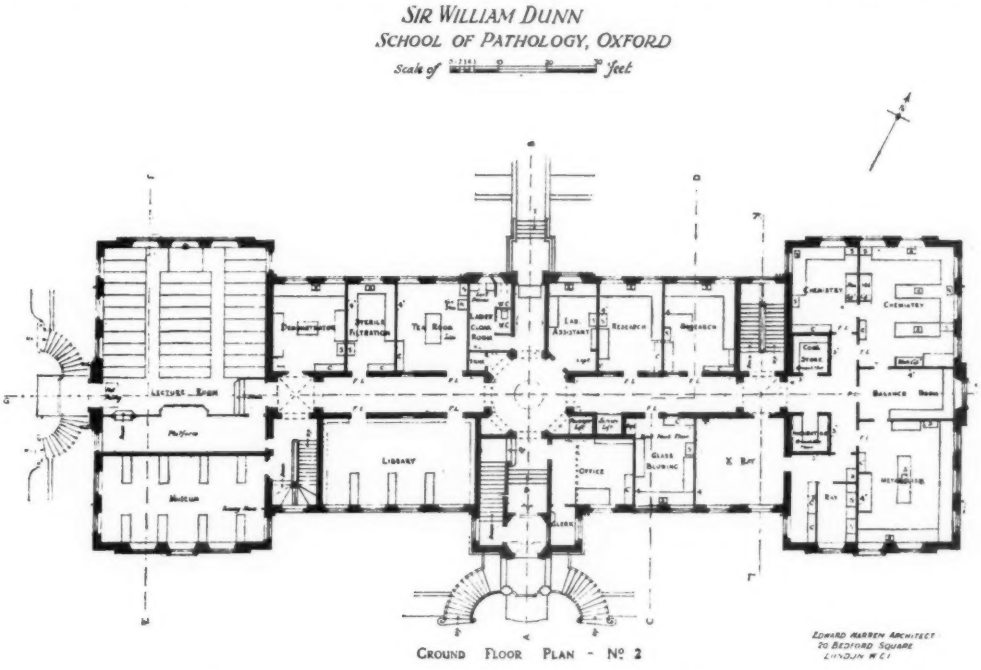
Side benches for stock, stone or tile topped benches for combustions and ovens, and wall shelving is also required, besides possibly a demonstration table.

Biological laboratories require simple benches, usually continuous, facing windows for microscope work.

These may be in soft wood. Water is more necessary for zoology than botany, but individual sinks are not wanted. Lockers below the benches may be decided upon to hold microscopes, with plenty of knee space alongside them, but

sometimes these instruments are banked together in a special wall fitting. The height of the working benches, generally 2 feet 6 inches to 2 feet 9 inches, is governed by the stools proposed and necessary for all students. Plenty of narrow wall shelving is required, and for herbarium purposes carefully made cases to hold pressed plants in filing jackets. For zoology, in the absence of a special animal house, small cages may find a place in or near the laboratory.

Balance rooms may be small, but must be well lighted and have rigid tables or shelves, which need not be more than 18 inches wide. They should not be used as store rooms. Preparation rooms should communicate with lecture rooms and also be separately entered. In small schemes communication with stores and laboratories is useful.



SCHOOL OF PATHOLOGY, OXFORD. Architect: Edward Warren

Museums mostly associated with biological sciences form a subject in themselves. Fittings vary greatly in size and character, and occasionally involve cases some 10 feet in each dimension. Dust is the great bugbear of museums. Owing to changes in air pressure, it is no use trying to make a case airtight ; air should be allowed access through absorbent plugs, which can be changed as dust collects in them. Protection from strong light by window or table case blinds is usually necessary.

I now turn to consider a few subsidiary rooms required in science buildings.

Departmental libraries form a growing demand, and even in schools form a great incentive to personal study among older boys.

A good working bench, large wash-up deep sink, plenty of drawer and cupboard space and shelving is required, also a blow-pipe table.

Workshops are usually small, well lighted rooms, with one or more heavy benches for wood and light metal work ; a bench for soldering and glue pot is also necessary ; racks for tools, storage for small timber, and possibly space for a lathe and drill may be wanted.

Stores should usually include receiving and unpacking rooms, and a small store attached to each laboratory is often a great convenience. Physics requires good glazed cases, chemistry rougher

types of bins and strong shelving. Large stock for chemistry demands a special fireproof room for ether and like liquids, and an acid store and locked cupboard for the more violent poisons. Space should be generous.

Storage for biology is concerned with specimens —some preserved in formaline, the use of which liquid demands special ventilation— large plans and diagrams, and, in the absence of a special room, space for mounting, with water and gas supply. A room confined to duplicate specimens is a convenience. Sometimes subsidiary rooms take a corridor form running alongside the laboratories.

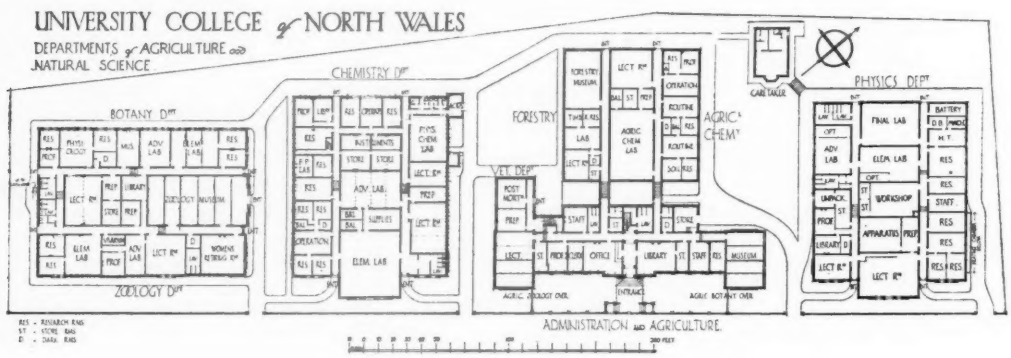
Allusion has already been made to supply services usually limited to cold and hot water, gas, steam, vacuum, compressed air, electric light and power, and freezing circulation. Some of these are sometimes required at more than one pressure. For advanced and research work it is a good plan to have these services in the rooms on walls over a narrow shelf containing means for drainage. This service shelf is placed at the exact height of the movable fittings in the room, so that when these are brought up to it the effect of a fully equipped working bench is obtained.

I must content myself with one special comment on these services in relation to filtration required in all chemical laboratories. This is generally effected by water pumps under a pressure of 40 to 50 lb., hence it is important to ascertain whether such pressure is available from the supply, failing which some compression plant must be installed or filtration by a vacuum plant resorted to.

As a final point of detail, floor drains require careful construction ; glazed ware is probably the best material for general use, though I have recently tried vulcanite on a small scale successfully, and have here some results on the use of nickel alloys for the inspection of anyone interested.

As pointed out, science buildings have many different aims, but may be broadly divided into those for teaching and research. In the former large general laboratories with detached benches predominate, lecture rooms are numerous, and apart from service requirements special rooms are few. Research, on the other hand, demands a large number of small laboratories or small suites, administrative rooms for heads of departments, and but few lecture rooms, chiefly for conference purposes.

In a research laboratory, work being individual, working benches are best fitted under windows, leaving as much space as possible in the centre of the room. It is obviously necessary, therefore, that the architect should first get a thorough understanding of the objects aimed at, after which he will alone be in a position to deal intelligently with the various schedules of requirements which may be placed before him, and give them that amplification in detail which will make him a genuine co-operator in this technical aspect of his many-sided profession.



UNIVERSITY COLLEGE OF NORTH WALES
Shows complete lay-out of science departments on a 700 feet frontage erected a few years ago
All are one storey except the agricultural building

Discussion

THE PRESIDENT, SIR BANISTER FLETCHER, F.S.A., IN THE CHAIR.

Mr. H. T. TIZARD, C.B., F.R.S. (Rector of the Imperial College of Science and Technology), in proposing the vote of thanks to Mr. Munby for his paper said :

It is said that a very distinguished engineer, Professor Bertram Hopkinson, used to end up a course of lectures on the design of internal combustion engines in this way : " I have now told you all I can tell you about the design of engines. In practice, of course, you will find that you will have to go about it in a very different way. In practice there is one golden rule, and that is to design your pipe work first and then, if you have enough room, put in your engine." I rather think that much the same kind of thing applies to the design of a chemical or a physical laboratory meant for University and research purposes. It seems to me that, very often, the chief requirement is that the pipe work, the electricity supplies, and the plumbing generally, should be designed so that it shall not only be as ample as possible but also as easily get-at-able as possible. We have had experience of laboratories in which neither of those desiderata was fulfilled. There is one golden rule about laboratory design which we should like to see observed : let us have our supply services not only more than sufficient for our present position but so placed that they are easily accessible.

I know you cannot lay down general rules to cover all cases, but is it not possible, as a general rule, when you have a site to design on, to design the height of the floors and the size of the windows, then do the lighting and the pipe work first, then, so to speak, put in wall partitions afterwards, so that if at any time you want different sized rooms you can, at little cost, throw down partitions and build them up somewhere else. The best laboratories I have seen, those which appeal to me most from the point of view of physics and chemistry, as best suited to their purpose, are made on that kind of plan. Some of Mr. Munby's slides illustrated this already. Pointing to one or two designs, you will remember, he said " That appears to me to be an admirable design," and when he said that it always appeared to me to be the simplest design.

Descending to details—because it is details which interest both the architect and the scientific men in these cases—I hate to see benches fixed round the walls of a room, and I also hate the kind of cupboards which are put under them. Usually they are impossible to clean properly, and in a few years they get as dirty as cupboards can be. There are ledges at the bottom, and there are ridges of wood which prevent a broom being used in them, or any dirt remover, unless it were strong vacuum cleaner. (And, by the way, I have never seen a vacuum cleaner inside a laboratory yet, though I suppose they are used.) I dislike a fixed bench, and I dislike particularly one which is so placed that you have to climb on to it whenever you want to open a window.

Another thing which is bad is to have a fume cupboard in front of a window. Why should not a fume cupboard be in the middle of the room ? Or it could surely be put away from the wall. It ought always to be large enough to be cleaned easily. Many fume cupboards are very difficult to clean.

For teaching purposes, especially in schools, it may be desirable to have fixed benches. For research work I think you always want moveable benches. You want, too, to allow the worker to make much more use of the walls. Look at the average laboratory and see what little use can be made of the walls. Walls are excellent for fixing apparatus on to, especially in a physical laboratory, which should, in my opinion, be fitted with strips of wood along the wall, to which apparatus can be screwed.

I could, of course, go on for a long time speaking of these details. But I may say that, broadly, I beg for simplicity, for cleanliness, and for flexibility.

I might add that libraries are seldom, if ever, big enough. The literature of science grows fast. The only picture of a library which was included among the slides Mr. Munby showed us had the shelves up against the wall. Think of the impossibility of providing a proper extension of a library under that system. The only thing to do is to bring the shelving out from the wall, so as to be able eventually to cover as large a proportion of the cubic space of the room with books as possible, and allow those who want to use the books to get at them readily.

And then in regard to lighting. One objection I have got to make in regard to the lighting of a laboratory is that there is never enough of it.

Sir RICHARD GREGORY (Editor of *Nature*) : I had thought that perhaps after the reading of Mr. Munby's paper there would be a discussion of some of the points raised in it, before I was called upon to second the vote of thanks to him, which I do most cordially.

I had the pleasure of knowing Mr. Munby before he became an architect, many years ago, when he was a science master at Felstead School. He was doing some very fine work at Felstead School, but left that occupation in order to secure the necessary professional qualification in architecture so that he might devote his life to the construction of science buildings. There is, as you know, no one who has devoted such particular

attention to that subject as Mr. Munby has done. Before he took up the subject of the design or the application of architecture to the needs of science buildings, Mr. Clay had devoted especial attention to school buildings, but no one, so far as I know, has dealt with science buildings as such. Many of us, therefore, welcomed very greatly the introduction of Mr. Munby into this new field, and watched with much interest the developments with which he has been concerned. I know many of the buildings which he has described in the course of his paper, and I propose to refer to only two types in particular. There is the science building at Clifton College, one of the finest science buildings in the public schools of England to-day, and it was designed by Mr. Munby. Also that very remarkable physics building which he gave us pictures of, the Henry Herbert Wills physics laboratory of the University of Bristol, which was designed by Messrs. Oatley and Lawrence. You have in those examples the two highest types of science buildings to-day.

As has been pointed out by Mr. Tizard, there are two points of view. In the case of the Herbert Wills building there was an advantage that almost unlimited funds were at the disposal of the architect. Professor Tyndall told me he had a free hand to include whatever he thought desirable in the laboratory. That is a condition which few architects and few professors meet with in ordinary life. The result is that we have in that Herbert Wills physics building everything which the professor himself desired, and architects who were able to put the decorative adornment of it to any extent that they desired. Thus you have a building which, I suppose, ought to represent the best combination of science and art. The relation between the two has found beautiful expression by Sir William Watson in the verse :

> " Science and Art, compeers in glory,
> Boast each a haunt divine ;
> My place is in God's laboratory,
> And in His garden mine."

You have those views expressed in that science building : internally everything the professor desired, externally everything that Messrs. Oatley and Lawrence could wish with regard to artistic decoration. It would be difficult to conceive anything better ; each research department is a unit of its own, with the supplies desired everywhere : electricity, gas, water, pressure or vacuum, available all over the building. It is in every way a credit to science and to architecture.

Mr. Tizard has already pointed out that all that the scientific worker desires is room to work, and a supply of whatever power he needs. All the rest may be put down as " trimmings " so far as the worker is concerned. I was in Copenhagen last year, and I was much impressed by the building which represents what may be called the Scotland Yard of that city. The architect has erected a building which externally is of a dignified character, and yet he seemed to say, " If you want to see what I can do, come inside." It is a building with a straight skyline, and when you go under an archway you come into a fine court or colonnade. The beauty is seen from the inside and not from the street. Similarly, the scientific man says, " I don't care what you do in regard to these outside trimmings—what I want is that the benches shall be placed properly, and that power shall be where I want it." As Mr. Tizard has said, what is wanted is flexibility of movement, instead of having everything fixed and nothing movable in any way. The difficulty, as everybody knows, with regard to this movement is the power supply and the drainage, which must take certain definite lines, I suppose. Mr. Munby did not refer to some of the details, with which he is very familiar. One of the questions is that of drainage in physics and chemistry laboratories, seeing that when boys, carelessly or otherwise, throw mercury down the sinks it is not lost. I have come across some laboratories where, whatever happens on the benches, the mercury does not go down the drain, but is collected in a sink. In some laboratory benches there is a groove underneath, and that is found very useful for drippings. All those things Mr. Munby is no doubt familiar with, and has introduced these devices into his buildings.

Mr. Munby has presented to you three main subjects of science teaching which are taken at school and university—namely, chemistry, physics and biology. Engineering and mechanics laboratories may, perhaps, go into another category. There is, however, one type of science building to which architects here, when funds are available, may devote their attention, as in the United States, and that is the construction of astronomical observatories. In the United States there are a dozen of those to every one in this country, and there vast sums have been expended on the buildings and their equipment ; the selection of the site, the design, the telescopes and other equipment. May we not look forward to a paper, at some future date, on the design and equipment of astronomical observatories ?

Mr. W. R. DAVIES, C.B. [*Hon. A.*], Assistant Secretary Technological Branch, H.M. Board of Education : My own connection with the design of science buildings has run rather to engineering and mining than to the staples of school instruction—chemistry, physics and biology. However, I shall be happy to pass on anything Mr. Munby said about our regulations, and I am sure the source whence it comes will ensure for it good consideration by my professional colleagues.

Sir ROBERT ROBERTSON, K.B.E., D.Sc., F.R.S., Government Chemist : It would be invidious to criticise in any detail Mr. Munby's paper, because it contains so much that one agrees with entirely. Only on matters of detail could one expand. But if one did want to be captious, perhaps one might take some excep-

tion to the remarks of a pessimistic nature near the beginning of his paper, in which Mr. Munby says that the British public do not care for science, and that we shall soon be a second-rate nation because of its neglect. As to the first point, I think there are great signs of improvement. I am told by Sir Henry Lyons that this year the Science Museum will have had a million visitors. With regard to the second, those of us who are scientific men will uphold the contention that we have the finest scientific men in the world; and if other nations have been in front of us in application of scientific discoveries, we are rapidly overhauling them.

Mr. Munby asks scientific men to say whether they prefer the unit idea of laboratory construction or a more individual treatment. I think that is mostly a matter of money. In some, as in Mr. Tizard's university, where they have plenty, they have this new physiological laboratory with all its uniqueness. But in Edinburgh, where they are thrifty folk, in the new chemical laboratories they have a plain saw-toothed building which can be expanded to any extent.

With regard to chemical laboratories, we must make a clear distinction between the organic or analytical laboratory on the one hand, and on the other the physico-chemical laboratory. In devising the latter I have had some experience. There, of course, the principle of the mobility of benches is most important. The scheme I adopted at Woolwich was founded upon the design of Professor Donnan, of University College. Round the room there is a skirting board, in which are shallow sinks for water, and movable tables of standard size. Alternately with the movable tables are fixed tables fitted with Ruabon bricks. I, also, dislike having cupboards underneath the tables; so the cupboards were placed on the blank walls of the laboratory. And in this laboratory we had the water supply at the periphery of the room, so that the floor was not broken up by any drains for water. All the water discharges running out of the building were collected outside. The pipes for gas, vacuum, compressed air and steam—at two pressures—were distinctively coloured, and were arranged round the walls of the room and in the corridors. That seemed to be an advantage, and I think it has worked well.

Although one can hardly go into details, I would like to refer to the best arrangement I have seen for fume cupboards. That is in the Baker Laboratory of Cornell University, U.S.A., where they have done away with the annoying sash, which comes down so often inconveniently. There is no sash in this fume chamber: just sides and a roof. There is a draught at the back, which is actuated by pressing a button. In front of the end of the flue taking the draught there is a single vertical plate of asbestos board fitting the whole of the back but leaving a space of one inch at top and bottom. There is thus a free space for all apparatus and operations on the floor of the chamber, and the fumes either dip under the asbestos plate or go over the top. That is found to be a very satisfactory arrangement.

As the Bristol Physics laboratory has been mentioned, the question of window blinds there may be referred to. When a handle is turned, not only the vertical blinds over the windows, but the horizontal ones over the lantern begin to come down. If you turn the handle the other way, the reverse happens.

Professor A. V. HILL, F.R.S.: I must thank you, Sir, for having invited me to come and listen to this discussion and this lecture from Mr. Munby. It is a pleasure to hear from an architect who is so well acquainted with the design of science buildings. When I went to Manchester in 1920, I found a laboratory there in which the architect had certainly not been acquainted with the needs of science in the design of the building; some of the fume cupboards, for example, had no exits at all. A fume cupboard apparently was the sort of decoration which you put in because it looks so well. We repaired that matter. And we did another thing. There were three long corridors, each about six yards wide, down which you could drive two motor-cars side by side. Two of these we filled with research rooms: in the third we built a library.

The only statement of a general nature I would criticise in Mr. Munby's lecture is that one wants a large number of small rooms for research workers. I protest against that. There is fortunately little secretiveness among scientific workers in this country, though I admit that in other countries there is a good deal; people hide themselves behind their doors and will not let others see what they are doing, as they are afraid they will steal their ideas and patent them. This fear is not common in this country, and you can help us to avoid it altogether by providing larger rooms for research work, and so mix people up and allow them to see and be seen by others. Though the policy in such matters rests rather with the heads of departments, a hint from the architect may be useful. I want architects, therefore, as far as possible, to give research workers larger rooms, where two or three people can work together; they will then develop no desire to hide their work from their fellows. Another thing architects might well remember is that a research laboratory should contain a common meeting ground. If the designer of a library can introduce a little room where a kettle can be boiled and teacups can be washed up, it would be well, for then workers could have tea in the library together. People are apt not to use libraries as they should. If, however, you can induce them to have tea in the library, and to go there occasionally to discuss their work, there is a chance that they may learn to go there also to use the books.

The PRESIDENT: You will agree, ladies and gentlemen, that Mr. Munby has given us an extraordinarily fine paper. He started life, as you have already been told, as a teacher, and he has been able to put some of his knowledge into practice. I was sorry to hear, from Professor Hill, of the fume cupboard, but you can hardly expect the designer to know that a fume cupboard wants an exit. What is extraordinary to me is that with so many professors about they did not find this out until some time after the building had been erected.

We have a number of architects here who know a good deal about this subject, and as there is no further time for discussion, I shall ask them to add to it by a letter to the JOURNAL; if Mr. Waldram and others of my friends here would do that, it would be a great advantage, and would add much to the value of the discussion. When this paper is published with the contributions, it will reach an audience of 7,000 members.

I now put the vote of thanks to Mr. Munby, which was proposed by Mr. Tizard and seconded by Sir Richard Gregory, for the paper which he has brought before us this evening.

This was carried by acclamation.

Mr. MUNBY, in reply: I wish, with the President, that we could have had more time for the discussion, but what we have heard shows that there is here a great field for a fuller understanding between scientific men and architects, and I hope we shall have in the JOURNAL some more opinions on the subject, because we as a profession need more enlightenment as to the requirements of men of science upon laboratories and science buildings.

I am particularly pleased to hear that I am considered to be pessimistic about the future of science in this country. We have among our guests to-night a Member of Parliament who has started a Science Committee in the House of Commons, and if that Committee functions I think it will be one of the most important things for science which has happened in this country for many years. We want to get the nation interested through our Members of Parliament and Cabinet Ministers; only then we shall feel that science is taking its proper place in our national concerns.

The following contribution to the discussion has been received from Mr. BERESFORD INGRAM, Divisional Inspector, Technology, Education Officer's Department, The County Hall:—

Mr. Munby made a plea for co-operation with the teaching profession and, in effect, asked for some guiding principles. I should wish to emphasise three:—

1. Science laboratories for day school use only (*i.e.*, for pupils up to the age of about 18 years) should be designed so as to insure ready and effective supervision: all corridors and passages should have a generous width, but not so generous that they invite the accommodation of cupboards and apparatus.

2. In technical institutions, where the laboratories are in use during the day for full-time students and in the evening for part-time students, equipment and apparatus accommodation should be plentiful and near at hand. The time given by evening students is very valuable and found by them at great sacrifice: no time, therefore, should be wasted in getting out and replacing apparatus. The laboratory steward's room and store apparatus should be centrally placed and, in order to minimise steward labour cost, the laboratory fittings should be such as require minimum cleaning attention. It is suggested also that more thought be given to devices for preventing the waste of gas, light, and water.

3. In university laboratories, follow Dr. Tizard's advice and provide the necessary artificial lighting, generous and easily accessible light, heating, power and water services, and leave the rest to the users of the laboratories. The progress of science may be jeopardised by an endeavour to accommodate the experimental work to the unconscious limitations set up by the architect.

Two lesser (but important) points:—

(a) Lecture theatres should *always* have side gangways (*i.e.*, running along the side walls): this is well purchased at the price of reduced seating accommodation. It must be remembered that the lecture theatre has to be filled and emptied (as a rule) quickly.

(b) In school laboratories particularly, the benches should be provided with wire baskets sunk into the tops immediately over the open drains. Filter papers, matches, etc., can be thrown therein and plumbing accounts and dislocation of work thereby reduced to a minimum.

Mr. P. J. WALDRAM, F.S.I. [*L.*], writes:—Although no one would disagree for a moment with Mr. Munby's plea for the best possible equipment for science schools—one may be permitted to join issue with him on the suggestion that unless this country bestirs itself and puts its house in order, it is in danger of being outstripped in scientific achievement in 50 years by other nations more wisely progressive.

Is it necessary to take quite so pessimistic a view of the scientific capabilities and potentialities of this country? As architects we are, of course, merely plain, practical business men with no small reverence for proven achievement,' but with little knowledge and

less reverence for the scientific means whereby an end is laboriously achieved.

May we not therefore say, without vain glory and merely as observers of current and past events, that hitherto the scientists of this country (by means which perhaps are more or less hidden from our ken) have always been in the forefront of scientific achievement, that they certainly occupy that position to-day, and that it is therefore our peculiar responsibility as architects to see that nothing is lacking in our work to ensure that their future scientific record shall be even more brilliant.

Scientific achievement is a growth which can be stunted by harsh conditions and unsuitable environment. One does not expect great results from communities below the poverty line. But it is not by any means a hot-house plant ; on the contrary, it generally thrives better in the open.

By real scientific achievement, I refer to discoveries and developments made, not by chance, but as the result of painstaking research and hard study directed towards some real practical end, hitherto unattainable, of advantage to mankind at large. I do not refer to research prosecuted merely for its own sake, such as the mathematical prosecution of the 50th place in the decimal value of π, or the exact thickness of a coat of paint or any other addition to our knowledge, scientifically interesting, perhaps, but of no immediate practical use.

When it is a matter of achieving some difficult but greatly desired end for the good of the community, something which the scientists of every other country have found too difficult, what is more likely than that ultimate success will be achieved by someone who refuses to be discouraged by failure or depressed by the gloomiest prospects, by one of those unconquerable optimists who can declare hopefully that " If winter comes, spring is not far off " ; in a word, by one of that fortunate race who every year has to live through a British November. I would venture to suggest that so long as the British climate continues as it is, and as it always has been, for so long will British scientists continue to lead the world.

There is also another reason, scarcely less potent, which, as Professor Hill said, we must remember in our planning. Research of any kind almost invariably demands co-operation. Very seldom is it a growth propagated in the single rooms which the author suggests for research. Single-handed research is almost invariably understaffed. Two men roped together can climb a mountain inaccessible to one. Three men will probably get higher still. We need scientists who can work together and trust each other without jealousy. Fortunately, team work—playing the game and playing it for the side—is ingrained in the British temperament, no less than a dogged refusal to acknowledge defeat.

If many years' association with all sorts and conditions of British scientists has taught me nothing else, it has at least taught me that our scientists can and do trust each other unreservedly and help each other generously. Let us therefore take to heart the invaluable advice of Professor Hill and afford them in planning the fullest opportunties for intercourse. our Cloistered they must be, but we can at least given them the cloister rather than the cell.

May I add a brief word of warning against the almost inevitable effect of the author's collection of admirably planned and perhaps lavishly equipped laboratories on the minds of those of us who have to advise clients with limited resources.

The finest results are not always obtained from the best apparatus ; and although as a great scientific nation we ought not to be satisfied with anything less than the best, let us not despise any opportunity for providing accommodation in schools for any experimental apparatus however crude, for our science must be practical and experimental if it is to be of any value.

Professor Hill will, I am sure, bear me out in saying that several of the more outstanding discoveries of modern times have been made under conditions which were unsuitable and unpromising to an almost incredible degree.

Just as the appropriate chemical solution may ask only for the simplest glass rod upon which to crystallise out into forms of wonderful beauty, so also will the appropriately charged mind seize upon even the most crude apparatus upon which to crystallise out ideas. Newton's falling apple was scarcely apparatus of precision ; but how lucky would be the modern scientist who could achieve results in his £100,000 laboratory of anything approaching equal importance to those which the mind of Newton evolved from his falling apple.

At least let us miss no opportunity of providing, not only in some, but in all our architectural schools at least one or two rooms in which students can analyse mortars, test deflections with knitting needles, break wood joists with weighted bricks, make up and test roof trusses with plasterers' laths, string, and spring balances, and learn leverage with a 5-foot rod and the kitchen weights.

Give them more if you can, but at least give them that. Architecture is building, and building is a science, not to be learned from books. Let us see to it that the next generation of architects have at least their minimum chance.

The Imperial College of Tropical Agriculture, Trinidad

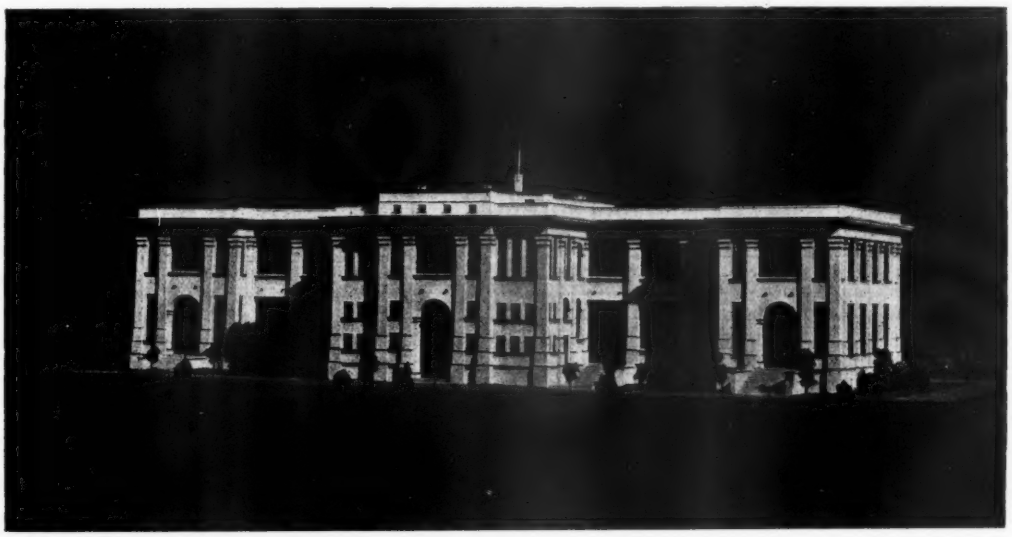
BY MAJOR HUBERT C. CORLETTE, O.B.E., F.S.A. [*F.*]

IMPERIAL COLLEGE OF TROPICAL AGRICULTURE, S. AUGUSTINE, TRINIDAD
Hubert C. Corlette, Architect

AFTER Mr. Munby had read his paper on Science Buildings, the President invited those present who did not take part in the discussion of the subject to contribute further material for publication in the JOURNAL. It has been suggested to me that some notes on the Imperial College of Tropical Agriculture might be of value to those interested in the subject of the address. In 1919, Lord Milner, as Secretary of State for the Dominions and Colonies, appointed a Committee to consider the proposal to provide a College for the encouragement of teaching and research in tropical agriculture. As a result of its report the Imperial College was provided as the first institution of the kind in the Empire. It may seem strange that, as the possessors of the largest tropical estates in the world, we should only so recently have discovered the fact that their economic use and adequate development must depend on a scientific education applied to the primary industries that group themselves under the name of agriculture. Political theory and uneconomic speculation were forced back upon a few basic facts by the rude shock of war. And now a few people begin to realise that prosperity in the long run depends upon the volume of production. Industry must depend and operate on raw materials; and it is evident that both the primary products and the secondary articles made from them must be grown, gathered, and transported, converted and distributed, by the aid of knowledge and experience, in other words, with scientific ability as well as political and occupational security. Otherwise, we are at sea in the winds of uncertainty. To meet and satisfy some aspects of these needs the College was built, and was available for occupation at the end of 1925. Its educational aim is wide, as it should be, seeing its function. It is necessary briefly to look at its curriculum and so discover something of this function. For an architect who approaches the solution of such a problem as the design—that is the planning and construction—of a science building must begin by seeing through and through for himself his own scientific analysis of a very intricate scientific problem. Some men of science are most unscientific in their apparent inability to appreciate what an architect has to do before a building can be devised, much less erected, and used for the occupation of scientific instruments, fittings, and the human investigators who are to use and abuse all this paraphernalia. A building is in itself a most complex scientific problem to-day, even without the added complexities of wires,

pipes, gas jets and drains, without which no science building is complete.

Generally, the curriculum of the new College was to deal as adequately as possible with the teaching of subjects that might be grouped under the heads of Agriculture, Genetics, Plant Physiology, Mycology, Entomology, Chemistry, Chemical Technology, and Economics. A three years course leads to a Diploma in Tropical Agriculture. And provision is made for post-graduate training and research. Agronomy, Sugar Technology and Physics are included in the course. And it was necessary also to find room in the development. This could be carried out, if it becomes necessary, and as was originally intended, by additions to the south of the present block. The principal front of the building faces the east, the long axis of the plan being from north to south. This arrangement on the site was adopted so that the prevailing easterly winds might move through all the classrooms and laboratories to keep them as cool as possible under tropical conditions. The central block of the building is provided with open galleries on the east and the west sides. In the north and south wings the galleries, at first proposed, were omitted on grounds of economy.



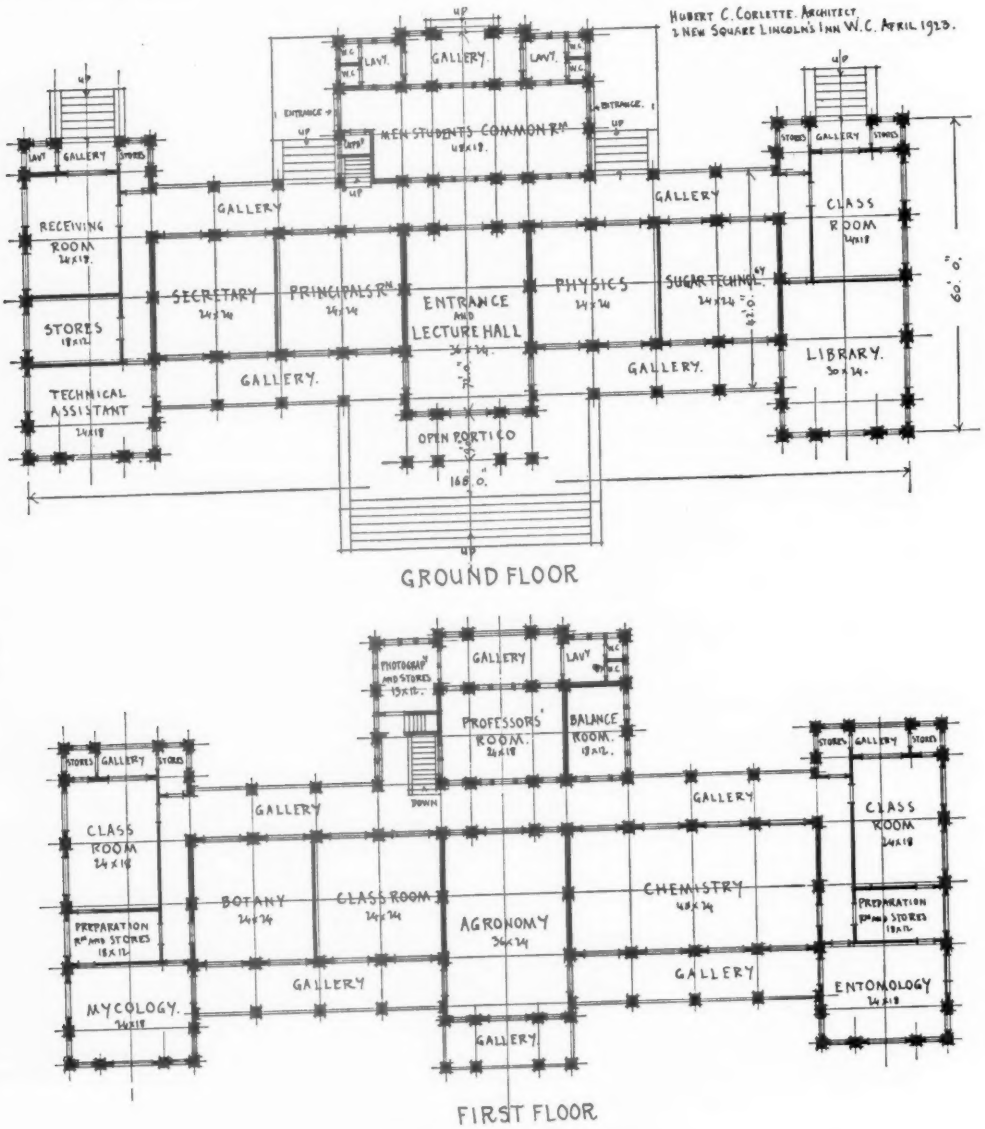
IMPERIAL COLLEGE OF TROPICAL AGRICULTURE, TRINIDAD: VIEW OF MODEL FROM S. WEST
Hubert C. Corlette, Architect

scheme of the plan for a library, the professional and administrative staffs, with Common Rooms for both men and women students. This scheme was much too large in scope for the scale of accommodation and expenditure at first proposed. It became, therefore, necessary to fit the teaching scheme to the cost or else to reverse the point of view. Some revisions were agreed so that the funds available could be made to provide for immediate essential needs. The chemistry department was housed in a separate building. And a model sugar factory was erected on a site within easy reach of the College.

The new College building, as now completed, has been erected in reinforced concrete. The external design and the arrangement of the plan have been worked out on general lines that will allow for future

But the windows in the outside walls of these wings are provided with external hoods, and internal Venetian blinds, to give sufficient protection from the heat of the sun and the strong light of the open sky. All the windows of the various classrooms have been made as large as possible. This was clearly necessary for practical reasons. They were required to give ample light but in such a way that it could be under control if necessary at different times of the day. And they were also to be regarded as an essential method of ventilation. All of them can be easily opened or closed.

At the sides, and also over the top of some of the larger ones, movable louvres are provided as an additional means of ventilation. But from the architectural and building point of view these big windows



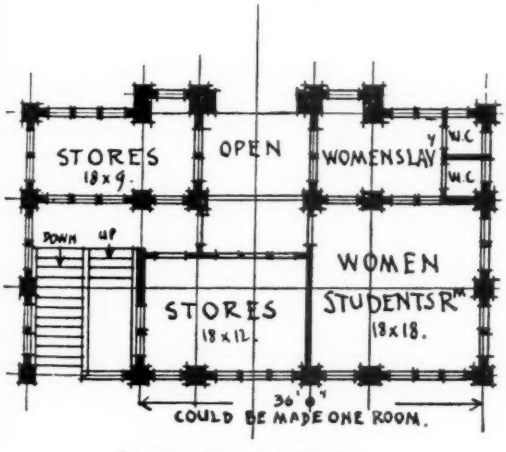
IMPERIAL COLLEGE, TRINIDAD

to indicate the character and purpose of the building. In planning the internal arrangements, and in working out the external design of the elevations, it was felt from the beginning that a frank, practical recognition of the uses for which the building would be required was essential. For no addition of "features," as they

are sometimes called, or ornaments, can produce a satisfactory building if its primary use and purpose is not sufficiently recognised in all architectural and structural members. This building, therefore, relies as far as possible on its actual shape and size, its form and construction, in the first instance, to produce such qualities of architecture as it may possess.

The plan of the building generally, and also that of the several classrooms, is symmetrical and flexible in character. The beams, and the posts supporting these, are spaced on what might be called a regular, or unit, method, and the division walls between all classrooms are partitions which can be easily removed to a different position if required owing to changing conditions of work in the College. By taking 12 feet as the unit of spacing from centre to centre of the main piers, rooms can be provided of any size that is a multiple of twelve by shifting the position of these light and removable partitions.

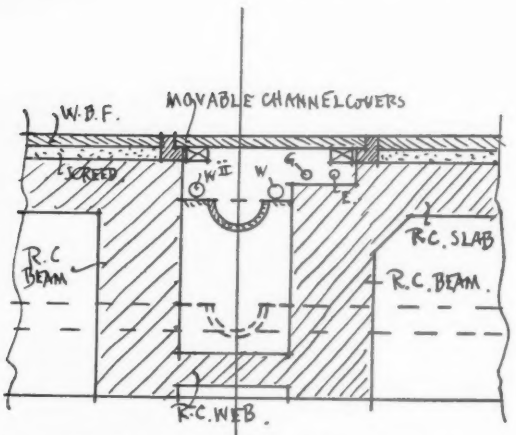
All the rooms are approached from the external galleries and not from internal corridors. By this means any obstruction to the cross-ventilation of the building is avoided. Some small changes in the allocation of the various rooms have been made, as the scheme of the curriculum for work has developed. But this does not alter the general plan. The principal entrance is in the centre of the east front. And from the entrance hall the west gallery becomes the main communication between the rooms to the north and south. A large men students' Common Room, nearly 50 feet long, is provided on the west. It has good lavatory accommodation and is screened from the sun by a small west gallery and portico of its own. Above the projecting block on the west, in which this students' room is placed, there is a mezzanine floor. This contains space originally allocated as a separate women students' Common Room and other rooms. The classrooms on the first floor follow the arrangement of those below. The library is now in the centre above the entrance hall. The flat roof of the building is covered with a hard rock asphalt in which Trinidad bitumen has been used as being more satisfactory than Mexican or other products. The same material forms the paving of the galleries. In either position the asphalt is laid direct on to the concrete roof or floor. The material adopted has special qualities which some of the " reconstructed " varieties do not possess. The whole of the roof surface has been whitewashed to increase the heat reflecting power of the asphalt. All the classrooms are a clear 14 feet in height to the under side of the floor or roof beams. And in all of them it will be possible to secure freedom for the movement of air across the rooms at the ceiling levels. This keeps the ceiling surfaces at as low a temperature as possible and also carries the warmer air away as it rises from the lower levels. By this means, experience has shown that two things most desirable under tropical conditions may be gained—namely, a current of freely moving air, and a constant flow of naturally impelled change in the air supplies. Inlets at the low levels and the natural properties of air combined aid in providing a motion to induce both the current and the change.



IMPERIAL COLLEGE, TRINIDAD

The floor surfaces of the class rooms are covered with interlocking wood blocks. Such a surface will have a long life. And there should be less noise from movement on the floors than if other materials had been used. Some sound is inevitable where concrete floors of a single slab thickness are a necessity. If acids are spilt on the floor the wood will absorb these readily and so reduce the risk of any residues filtering through to the concrete and steel below the blocks. The structural steel bars of the floors and beams could, if sufficient precautions are not observed, be attacked and destroyed by these acids. Recent research has shown that some patent flooring materials must be used with care for this reason. The possibility of what are described as " hair cracks " developing in reinforced concrete floors has not yet been eliminated. These cracks, however slight, are transmitted to the finished surfaces of the flooring material. And if certain acids have been used to harden the material artificially, they may be carried through those cracks to the steel below in the structural parts of the slab, by periodical washings on the floor.

Laboratory drainage is provided in each of the class rooms. All the main channels are carried in a series of double drainage beams with an even " fall " to the different outlets provided for each series of rooms. At various points these channels run through the main structural beams that carry the floors. But where



DOUBLE R.C. BEAMS - DRAIN CHANNELS CARRIED THROUGH AT NEUTRAL AXIS

IMPERIAL COLLEGE TRINIDAD

H.C. CORLETTE.

they cross those beams they do so at the level of the neutral axis.

Consequently they will not reduce the carrying capacity of the beams by any interference with the steel bars of the concrete taking the strains of compression and tension, or the shear stresses. The drainage beams are double for a specific reason. By this method of designing their construction it is possible to carry the channels in such a position that if any acid should chance to escape through the bed of the drain channel it will not come into contact with any of the structural steel in either of the beams. Risk of deflection or collapse from such a cause is therefore avoided. There will be no danger point where the channels meet and change their direction in the neutral axis as there are no joints in the channels where they cross the beams.

All the laboratory drains will be easily accessible for inspection or scouring, whether in or above the floors. Those in the floors have been provided with teak covers in short lengths, which can be lifted by flush rings at any point. And the removal of any one section of the cover will allow the waste pipe from the sinks in the benches to be inserted so as to deliver its waste into the drain below in the proper direction for its " flow " and " fall " to the outlets. The gas, water, and electric light supplies are also carried in these double beams.

The provision of drain channels in all the class rooms was decided upon for practical reasons. It may be that in some rooms drainage will not be necessary at first. But if conditions change and the use of any room is altered, the drains will be ready and available without expensive alteration. The principle in view was to continue the idea of flexibility and unit structure into this detail of laboratory arrangement. It allows both for development and change in technical processes to be adopted in any room, or series of rooms, and it also permits the placing of benches for various experimental purposes in alternative positions either against the walls or on the central area of the floor. From what has already been described it will be seen that it was essential to study accurately, at the early stages of planning this educational workshop, all questions concerning the type, use, shape, and size of the fittings and furniture that might be required. Those now in use in various different scientific institutions were carefully studied in detail, the object being to discover, and take advantage of, past experience and recent experiment in such matters. Certain principles generally applicable were observed. In some instances costly, and complex, unnecessary, detail was recognised as something undesirable, and avoidable. Valuable experiments in extremely simple and direct practical, and adaptable, unit systems were examined with satisfactory results. And, so far as possible, a suitable and flexible unit type of laboratory fittings and furniture was devised in detail to meet the special requirements of the new College. Experience seems to show that men engaged in teaching science or research do not sufficiently realise the importance of deciding all details of fittings and furniture at a very early stage so far as possible. They are really the key of the situation where science buildings are concerned, as any architect knows easily. They determine the sizes of rooms, positions of windows, situations of laboratory drains, as well as the general disposition of the several main departments and their subordinate subdivisions. A neglect of such early decisions may involve increased cost in revisions of a plan, alterations in work already executed, and delay in the completion of the whole building, causing a total if temporary arrest of educational procedure.

The ground floor of the whole building is lifted up about 4 feet above the surrounding site levels. This allows for the passage of air under the floors and keeps the lower rooms sufficiently above the ground to avoid some of the effects of tropical heat and moisture at these lower levels. The area under the building is paved with concrete to prevent the growth of vegetation. And a convenient access is thus provided to all the laboratory drainage and services at ground level for inspection or repair. The sanitary and rain water drainage is collected and carried away in separate systems. A series of experimental tests of the temperatures in the various rooms was made above the floor

levels and below the ceilings of the ground floor and also of the first floor after the completion of the building. It was found that there was little or no difference to be observed. The temperatures recorded showed an equable condition and at a lower level than in the open air. It was noted particularly that the temperature immediately below the exposed asphalt-covered flat roof was really no more than under the ceiling of the rooms on the ground floor.

One or two further points should perhaps be mentioned. Large windows are desirable, even in the tropics, for airing purposes. An excess of light can always be controlled. Separate panes of glass are preferable to very large single sheets for economy in breakages provided the panes are sufficiently large and do not require too much use of bars that will obstruct light or interfere with its direct transmission when microscopic work is being done. A reflected light from a white internal wall is often as valuable as direct light for use with a microscope. Parts of a window opening can be used for the introduction of louvre blades instead of glass. But where these blades are movable, and worked so as to open and shut by the use of operating gear, precautions are necessary. For in driving wind and rain it is practically impossible to stop the passage of driven water through some part of the louvre mechanism. Another point is that where work is to be done near the window openings, some provision is needed at or near the bench levels to prevent the disturbance of delicate investigations by the passage of too much air through the windows at a rapid rate. If this is not done dust and rain may be driven into the laboratory with the wind, otherwise welcome as air, so that experimental work may be interfered with and perhaps destroyed.

It may be of some interest to add that the whole building, for which the contract was signed in 1923, when prices were high, was erected at a cost of one shilling and tenpence a foot cube, and there were no extras on completion. The work was carried out by English contractors and British materials were used throughout at a distance of some four thousand miles overseas from London.

The external character of the building has been developed normally from the method of construction employed, the materials used, and the functions the plan was required to meet if the College was to be able to carry on its work as a practical teaching institution. These seem to be the ruling factors in any approach to the solution of a building problem. They were so in the past, when a satisfactory result was achieved. And it is probably a fact that success in our present and future efforts may come from experience in trying, so far as we may, to follow this kind of precedent. By some such method we shall perhaps be able to avoid starting with preconceived notions of an antiquarian style derived from archaeology. We may at least expect to find by experiment in that direction the way in which new materials and new methods of construction may be applied in the hope of arriving some day at results that will be satisfactory in an architectural sense. It enables us to avoid pretence and to get rid of the idea that persists in the minds of some folk still that architects are people who " draw plans " and add " art " to essential structure. Whereas to themselves they are persons who try to build some buildings the architectural character of which is inherent in their plan, their structure, their practical uses, and the materials out of which they are made.

The architecture of this building, in so far as it seeks to express any particular architectural character, is simply derived from a system of posts and beams in concrete reinforced with rods of steel. The necessary windows and the external galleries with their shadows supply in themselves some change in detail and differences of scale, in their colour or materials, and in their surface textures. Some red tiles have been introduced to provide a simple relief from too much monotony and to take the place of moulded forms where these might otherwise be used in capitals, bases, cornices or string courses. The effect of the building as a whole may perhaps be best described as a grey tone bleached by the sun with some added colour derived from exposure to the weather. The steelwork of the windows and doors is painted a tropical green and the woodwork of the louvres has been allowed to remain its natural colour—a light brown.

Reviews

LECTURES ON ARCHITECTURE. By Sir John Soane. Edited by A. T. Bolton. 4o. *Lond.* 1929. [*Soane Museum : Publication No.* 14.] 10*s.* 6*d.*

In looking through this new edition of Sir John Soane's lectures recently produced by the indefatigable curator of the Soane Museum, one cannot help thinking that the development of architecture during the last century has made very little progress on the particular lines laid down by Soane and his contemporaries. When we examine his masterly plan and the dignified scholarly elevation for a Senate House (Plates 49 and 50), and afterwards call to mind the work of the masters of architectural pastiche of to-day, there is little development to show in that special direction for the time that has gone by since the death of Sir John Soane in 1837, in marked contrast with the movement—it may be progress or it may not, we are too near the facts to be sure of their significance—in other branches of thought and human activity which has been an outstanding characteristic of the last hundred years.

In reading his lectures, especially Lecture XII upon Construction, one feels that Soane himself seems to have had some presentiment that he was living at the end of an aristocratic age which had produced the school of architecture of which he himself was to be one of the last masters, and at the commencement of an age when economic pressure would have a marked effect upon construction and design.

It would be presumptuous to belittle these lectures ; they constitute a scholarly and critical statement of the traditional and aristocratic attitude towards architecture in the early days of the nineteenth century, which the student of to-day should not neglect ; and, as pointed out by Mr. Bolton in his preface, they are all the more remarkable because the preparation of the first six lectures must have occupied the whole of the leisure time of a man who was incessantly engaged in a large and exacting architectural practice. But they should be read by the student with his eyes open to the fact that emphasis in these twelve lectures is laid slightly in the wrong direction : in reading them one cannot forget the heavy hand of Vitruvius ; imitation has always led towards sterility, but it is the spirit and not the form that is meet for worship ; indeed, the contribution to civilisation made by the Greeks and Romans and by the masters of the Renaissance is something that cannot be measured, but even they have not said the last word in architecture.

The student, or the master of architecture, for the matter of that, will do well to take these lectures just as the student or master of music reverts to his scales and exercises, that is for study and refreshment, with the realisation that for the trained and flexible mind rules are playthings for exercise and delight, rather than necessities to cramp the imagination.

W. E. Vernon Crompton [*F.*].

DESCRIPTION DE LA BELLE ET GRAND COLONNE HISTORIÉE DRESSEE A L'HONNEUR DE L'EMPEREUR THEODOSE. *Dessinée par Gentile Bellin. Fo. Paris. MDCCII.*

This folio volume is of great interest not from the beauty of the engraving nor from the rarity of the book, but for a very quaint reason.

The fifteen engraved plates represent one long horizontal band of sculpture many yards in length. On one of the plates is shown a large circular column behind and overtopping a steep bank. On the abacus, some soldiers are in the act of dropping a man. This has to do with the historian ; to us the interest is that the shaft of the column is sculptured as a spiral winding round as the steps would do inside. The spiral shows five times and the sculpture is drawn rising with the curve as it should, but if we examine the plates we find these tableaux are given as perfectly horizontal, which must have been a very difficult piece of work and, of course, quite untrustworthy and useless as an archæological record.

The sculpture represents the Triumph of Theodosius the Great, as carved on the column of that name, but very strangely Dr. A. van Millingen and Sir Edwin Peers agreed that this carving was that on the so-called column of Arcadius, the Emperor who succeeded Theodosius.

At the end of last century the pedestal of the column of Arcadius was standing a perfect wreck, but a fragment of the staircase within and the commencement of a winding band of sculpture was discernable, and if I remember rightly, they saw near by fragments with sufficient indication of sculpture to identify this carving.

A. E. Henderson [*F.*].

Correspondence

SESSIONAL PAPERS AND THE CLOSURE.

9, *Old Square,*
Lincoln's Inn, W.C.

To the Editor, Journal R.I.B.A.—

Dear Sir,—May I ask for space to ventilate a matter of general interest on the procedure newly adopted as to time devoted to our ordinary meetings. Admittedly these meetings have been too long and resulted in depleted audiences, and modern distractions make good attendances a difficulty, but I feel that the closure at 9.30 deserves more consideration.

I had the privilege on the 18th of introducing a subject, I think now agreed as important, over which, with a number of slides, I occupied 55 minutes. Possibly I was selfish, but for reviewing a topic which has not been before the Institute for a quarter of a century, the time does not seem excessive. For the rest of the meeting, including formalities, 25 minutes remained only. I quote a professor whom I happened to meet a day or two later. He said, " I could see that everyone round me was anxious to get up and debate your points, and it seemed to me that you had a unique combination of architects and scientists who might have exchanged views with great mutual advantage had more time been given." I invited him to write his opinions for the Journal, but he replied : " No ; I thought of it, but it is not the same thing : one has not the benefit of having heard others, and the fire has gone out with the occasion."

Evidently we cannot have both a paper and discussion in 80 minutes. The previous circulation of the paper and its being taken as read has been suggested, which would mean its prior appearance in the Journal. This would divorce the paper from the slides which so often are

required to explain it, and it is doubtful whether many who would trouble to read it, would bring its purport to the meeting ripe for discussion.

Of course, papers differ, but when eminent outside visitors attend, it seems at least a pity that the help they can give by an expression of their criticisms should not be utilised.

Would it be possible in such cases to have a break at which some might withdraw, the chairman be released, and the enthusiasts might remain rather longer to exchange opinions. A successful meeting means a good deal of Institute staff work, and it does seem unfortunate if full advantage of the occasion cannot be taken.—I am, sir, yours, ALAN E. MUNBY [*F.*].

JAUFFRED AND GARIEL AND ANOR. *v.* JOSEPH SUNLIGHT.

8 *and* 9, *Great James Street, W.C.*1.
25 *November* 1929.

To the Editor, JOURNAL R.I.B.A.—

DEAR SIR,—With reference to the report contained in your issue of 23 November as to the case of Jauffred and Gariel and Anor. *v.* Joseph Sunlight, may I venture to raise a protest against the phrase used by Mr. P. J. Waldram, in his introductory remarks, in referring to the fact that a suggestion had been made " that the basis of the usual standards of adequate light were scientifically inaccurate." Mr. Waldram goes on to use the words " these *legalised* standards have proved invaluable to architects." Whilst I do not for one moment disagree that these scientific methods, of which Mr. Waldram a few lines later describes himself as the author, have proved to the greatest value both to the Courts and to the Profession, I must object to any suggestion that they have been *legalised*, or that they have any force of law. So far as the legal position is concerned, it remains necessary for a complainant to prove that he has suffered legal damage, and Mr. Waldram's standards have no more legal force than the old 45 degrees rule. As it is possible that some members might be misled by the use of such a phrase by a gentleman of Mr. Waldram's known authority on these matters, I suggest that you should either publish a disclaimer or, if you see fit, publish this letter.—Yours faithfully, WILFRID TRAVERS [*F.*].

LORD CHARLEMONT.

15, *Baker Street, W.*1,
25 *November* 1929.

To the Editor, JOURNAL R.I.B.A.—

DEAR SIR,—Mr. Grahame B. Tubbs, writing of the incident with Piranesi, refers to Lord Charlemont as an Irish statesman. One member of the family settled in Ireland about the end of the sixteenth century, and even now his descendants, who are still in the country, are called settlers by the Irish. Francis Hardy, the author of the *Memoirs of James Caulfield, Earl of Charlemont*, writing of the visit to Rome, says Lord Charlemont " patronised Parker, and two or three painters, whose names I do not distinctly remember. Piranesi he endeavoured to encourage, but that eminent artist was self-willed, and often violent in his temper. He took something amiss of Lord Charlemont (what, I know not, nor is it now of any consequence), but, after he had dedicated three or four of his prints to his lordship, he struck the name out, and inserted that of the two Adams's. Not content with that, he published an abusive letter to Lord Charlemont ; some copies were sold, and dispersed, before anyone had heard of the quarrel, but several persons in authority at Rome were extremely angry with Piranesi when they read his pamphlet, and he would have been treated with some severity had not Lord Charlemont's usual good nature interfered. Piranesi made an apology, the pamphlet was suppressed at Rome, and the belligerent parties were again on amicable terms."—Yours very truly,

S. B. CAULFIELD [*F.*].

THE LATE BERTRAM GROSVENOR GOODHUE.

24 *November* 1929

To the Editor, JOURNAL R.I.B.A.,—

DEAR SIR,—I have been asked to write a few words about Bertram Goodhue to be published in the JOURNAL. As a draughtsman Goodhue needs no spokesman, for the recent exhibition of his drawings in the R.I.B.A. galleries gave ample evidence of his great skill. He had a facility with his pen and pencil which few architects to-day possess, and this facility led him into many fields apart from architecture. All of these drawings shown, however, were early works done before he began to interpret the Gothic architecture, which he loved, with the freedom which his spirit craved. In his association with Dr. Cram he followed fairly closely the traditional forms, and it was only after he opened his own office that he began to open into full flower.

I remember once meeting him at the Century Club when he had returned from a visit to Yale University, where much against my inclinations I had been compelled to build in the Gothic manner a large chemistry laboratory. " What I like about your new building at Yale is that it isn't too Gothic," he said. At the time I did not know whether this was meant for a compliment or the reverse, but as I watched his later work I came to the conclusion that it was sincerely meant. His was the spirit of the explorer always seeking new expressions and irked by the limitation of even as free a style as Gothic. I wish that the exhibition in London had contained some of his later work, the Nabraska State Capital for instance, for it would have shown better the real genius of the man. But this was an exhibition of his draughtsmanship, and in the years before his death he was far too busy to give much time to drawing ; his mind was occupied in giving expression in brick and stone to many of his dreams, not in putting them on paper.

His mind was never at rest. Wherever and whenever you met him his brain was seething with some new or amusing idea which bubbled over in delightful expressions. He was an exhilarating companion. His death came much too soon, for he was just beginning to express in new forms what America is trying to say architecturally.

As always, when you lose a friend such as he was you regret the opportunities you had and did not grasp of seeing him.—Yours faithfully,

WM. ADAMS DELANO,
President, New York Chapter,
American Institute of Architects.

Drawings and Sketches by the Late Bertram Grosvenor Goodhue

BY MAJOR HUBERT C. CORLETTE, O.B.E., F.S.A., [*F.*].

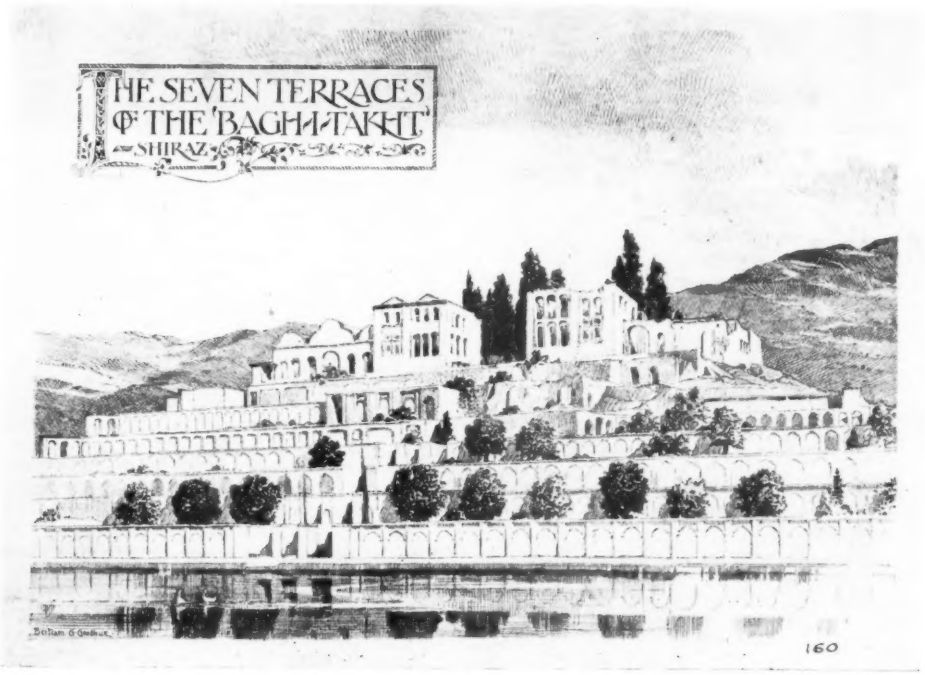
IT is really something of a relief to have seen the fine collection of drawings by the late Bertram Grosvenor Goodhue recently exhibited in the galleries of the Royal Institute. They show that the man who made them possessed a quite intimate perception of those finer qualities of large structural form, elementary masses, and the technique of skilled craftsmanship that must be assembled together in any building if it is to exhibit any true, lasting, architectural character. They are in a very real sense drawings of buildings, not drawings that are a pretence of, or substitute for, building. We constantly hear the criticism of method to-day that men on all hands are being taught to " render " more than to build ; to draw rather than to construct ; to think in lines and paint and not enough in the terms of those material things these should represent. Goodhue was, as we all know, a great builder, as every architect should be, and must be, all the time. It is easy to see that the object of all his drawing was that he might be able to build new buildings with character, and to study the character qualities of all old work with which he came in contact. Many of these drawings are studies of or for work of a Gothic or Tudor type. A few are Persian, Eastern ; some remind us of what are known as Old Colonial in manner. There is quite a wide range of medium used in the several exhibits. Some are presented in a large, free use of a broad-pointed crayon. Others are examples of the most delicate and subtle handling of a pencil or a pen. And others, again, are freely, quickly touched into the form of his ideas, with either a pencil or a crayon, and finished in water-colours. He has used these last with a fine understanding of their qualities and their limitations.

WATER COLOUR SKETCH OF A CHURCH. By the late Bertram Grosvenor Goodhue.

And in doing so he has handled the brush as a valuable modelling tool, and by it not only colour and shadow, light and shade, is shown, but also the texture, the material, and the technical structure of a building is studied with equal care. It is evident that, in each of these masterly drawings, the actual drawing done is a means to an end, not an end in itself. And that end is the study of plan, design, and structure, so as to be the better able to build and construct, not reproductions of the past, but new conceptions, based on a respect for tradition that admits neither conscious archaisms nor strident novelties.

The value to us of such exhibitions as this is that we may discover, if we can, what it is that makes an architect ;

PENCIL SKETCH OF A LARGE BUILDING WITH PORTICO AND TERRACE
By the late Bertram Grosvenor Goodhue



PEN AND INK SKETCH "OF PERSIAN GARDENS"
By the late Bertram Grosvenor Goodhue

or enables a man who builds to create, from the educated recesses of a richly endowed capacity, something we can regard, for its quality, as fine architecture. We seek, and I think we find, that this ability to endow building, mere practical, sensible structure, with an indefinable imaginative, poetic charm, comes from a power to combine in one result what seem to be opposing, contending qualities of the mind. A reasoned common sense must evidently be applied to the solution of the practical problems of a plan; to its development and realisation by a use of scientific knowledge and experience; and then to the co-ordination of the whole so that all the many and varied aspects of design are resolved into an ordered unity till they emerge as one single, satisfying, imaginative conception. We may see in his work how Bertram Grosvenor Goodhue proved that these things were necessary, that they were possible. For it is evident that he possessed this power in a very large degree.

BLACK CRAYON SKETCH FOR A HOUSE IN WESTCHESTER, NEW YORK
By the late Bertram Grosvenor Goodhue

The Proposed Charing Cross Bridge

The following letter from Sir Banister Fletcher, the President of the Institute, on the proposed Charing Cross Bridge appeared in *The Times* of 28 November :—

27 *November*, 1929.

To the Editor of "The Times,"—

DEAR SIR,—The scheme for the new bridge at Charing Cross and its approaches has not been officially published, and the public has not been informed whether the plan drawn up by the engineers and Sir Edwin Lutyens has, in fact, been adopted. Through the courtesy of the Clerk to the London County Council the Royal Institute of British Architects has been able to obtain the following particulars of this plan. The river at this point runs north and south. On the east side of the river, and at a point just east of Waterloo Station, it is proposed to form a circular place of a diameter of some 370 feet, from which eight streets radiate, Oakley Street south, the New Cut north-east, Waterloo Road north-west and south-east, and on the north side between Waterloo Road and the New Cut, the new roadway to Charing Cross Bridge, which ascends by a steep curved ramp (about 1 in 29) till it is high enough to pass over the Waterloo Road side by side with the Southern Railway. The new roadway then continues into the straight run across the bridge, leaving on the right or north side, a triangular area extending up to Waterloo Road and the river front, the whole of

which is to be occupied by the Southern Railway new terminal station. On the left or south side of the new roadway, an area extending south to the L.C.C. County Hall and east to York Road is to be developed by the L.C.C. At the point where the new roadway going west reaches the river, a square is formed, and within this square the road branches right and left on a lozenge-shaped plan returning to the straight on the bridge or west side. From the north and south apex of this lozenge plan, roadways are taken north to Waterloo Road, and southwards with returns to York Road, which it joins at the point entered by Chicheley Street north-east of the L.C.C. Hall.

The new road crosses the river on a bridge on the site of the existing railway bridge, passes over the Embankment to a pear-shaped place from one corner of which it continues west-north-west to another lozenge-shaped place east of St. Martin's Church, entered by Duncannon Street and the Strand from south-west, by the Strand from north-east, by the new road south-east and the continuation of the new road to north-west to the west of Charing Cross Hospital. Coutt's Bank, St. Martin's Rectory and Schools, and other buildings are removed, and a wide empty space is left to the east of the National Portrait Gallery, extending from the Gallery to the Hospital east and west, and from St. Martin's Church to the existing buildings north of the Cavell Memorial north and south.

This scheme is open to very serious objections on the score of traffic, of cost, of the development of London on the Surrey side of the river, and of the failure to provide any adequate opportunity for fine architectural treatment.

1. Traffic.

(*a*) The proposed position of the station interferes with traffic north and south on the Surrey side of the river. The Belvedere Road is stopped altogether, the York Road would have to pass under a tunnel some 350 feet long, and there would be no other roadway.

(*b*) Waterloo Road would also have to pass under a tunnel of the railway, and the new roadway, about 350 feet long.

(*c*) No provision is made in the scheme for a continuous roadway passing along the river front as on the Middlesex side.

(*d*) On the west or Middlesex side of the river no provision is made for access to the Embankment or Northumberland Avenue, and there is no direct outlet for traffic going north-west. The lozenge-shaped place intersected by the Strand, which occupies some two acres of ground, duplicates the roundabout of Trafalgar Square, and as all traffic crossing the bridge must enter from the Strand, traffic would be seriously congested at this point.

(*e*) The scheme makes no attempt to meet the requirements of traffic outside the immediate neighbourhood of the new bridge and station, or to improve the access to and from London from the Kent and Surrey side. Any proposals for alteration of roads should be part of a far more comprehensive scheme than is suggested by the official plan.

2. Cost.

The cost of this scheme is enormous without compensating advantage in the development of frontages. On the west side it involves the destruction of Coutts's Bank, Gatti's Restaurant, the Schools and Rectory of St. Martin's-in-the-Fields, and other buildings. On the Surrey side the whole of the north side of the new roadway from the river nearly up to the existing Waterloo Junction station, a length of over 1,500 feet, would be a blind wall of the new station and of the adjoining portion of the railway.

3. Development on the Surrey Side of the River.

The site allotted to the new station comes right up to the river instead of being set back at some distance from it. This renders impracticable that opening up and development of the district on the Surrey side between the river and the existing railway from London Bridge to Charing Cross Bridge, which has long been regarded as an urgent necessity.

It has been suggested that the whole idea of a station above ground is out of date, and that the right solution is to place it underground. If this is practicable, it would remove some of the most serious objections to the official scheme.

4.

In regard to architectural treatment this scheme appears to have been designed without any reference to the possibilities of great monumental design.

(*a*) It does away with the possibility of a long vista. By an alteration of the line of the bridge and roadway it would be possible to get an uninterrupted vista from the south-east corner of the National Gallery and St. Martin's Church right through to the high ground beyond London to the south-east. With the exception of the Mall there are no vistas in London, and a vista such as would be possible at Charing Cross would be of inestimable value to London from every point of view.

(*b*) The pear-shaped place on the west side where the roadway turns north-west, would render any satisfactory architectural treatment here impossible.

(*c*) The blind wall of the station and railway on the east side would be exceedingly ugly. Beyond this point the road continues anyhow, and no consideration seems to have been given to the effect this would have on the architecture.

The Royal Institute of British Architects views with very grave concern the possibilities of the plan of this great undertaking being settled on wholly inadequate consideration. So far the scheme appears to have been determined solely with regard to the interest of the Southern Railway and the supposed requirements of traffic. There are other considerations of first-rate importance which should be taken into account in the public interest, not only for this but for future generations, and before any final decision is made in regard to the bridge, the roadway, and the station, the Royal Institute submits that the whole question should be examined *de novo*. Other schemes which have been proposed should be investigated, further schemes should be invited in competition in order that no effort may be spared to ensure the success of the greatest undertaking for the improvement of London made since the formation of the Thames Embankment.—Your obedient servant,

Banister Fletcher.

On 2 December *The Times* published a letter on the same subject by the Rt. Hon. Lord Esher, which we give below :—

To the Editor of "The Times,"—

SIR,—In common with other members of Parliament I shall be called upon to give a vote for or against the Charing Cross Bridge scheme. Politics are not involved in this matter. The ordinary leadership of parties is abrogated. As no lay examination of so technical a problem is possible, anyone called upon to vote for or against the Bill must look to the most competent authority for guidance. I, for one, shall accept the leadership of Sir Banister Fletcher, speaking on behalf of the Royal Institute of British Architects, and of Sir Reginald Blomfield, speaking forcefully, as he always does, for himself. My vote will be given against the Bill ; and if a proper whip up of Peers is issued, the result cannot be in doubt.—Yours faithfully,

ESHER

The Times of 3 December contained the following letters from the President and Mr. W. R. Davidge :—

To the Editor of "The Times,"—

SIR,—In the article on Charing Cross Bridge in Saturday's issue of *The Times* there occurs the statement that "the view in official circles yesterday was that the project has gone too far now to admit of amendment and that alternative proposals have come too late." This attitude as a reason for proceeding with the official scheme cannot be allowed to pass unchallenged. The statement itself cannot be regarded as correct ; for alternative schemes existed and were made public long before the present official scheme was put forward.

To take two only : as long ago as 1916 the very practical and straightforward scheme for a low level bridge by the late Edwin T. Hall, F.R.I.B.A., was published in the R.I.B.A. JOURNAL. Then there was the somewhat similar but perhaps even better plan as regards the distribution of traffic and freedom from insanitary approach viaducts of Messrs. Niven, Caroe, and Muirhead. These schemes were not "too late," but apparently they were too early to arrest the serious attention of the responsible authorities. In addition, there has actually been a public exhibition of several possible plans for all to see at Lancaster House, the headquarters of the London Society. These alternative proposals have thus been in advance of the official scheme, but what is undoubtedly true is that occupation with the official scheme has so blocked the way and has been such an objective association in official minds as to make them apparently hardly conscious of these other already existing schemes, and certainly there has not been that serious consideration of their merits or of suggestions contained in them which might well have been incorporated in any final scheme.

The project, it is also said, has gone too far to admit of amendment. That may be, but it still admits of rejection. Delays are proverbially dangerous, but this is the exception that proves the rule, and, in the interests of the right development of Central London, south as well as north of the Thames, we call delay to our help.

The scheme as at present conceived would undoubtedly be productive of a festering slum area in the centre of London. The present Government and the London County Council should surely be the last authorities willing to promote such a scheme. I plead for delay as essential to a right decision. Let there be further delay, let there be further negotiations with the Southern Railway, but let us not be in a hurry to carry out a project which will be pointed to for all time as London's monumental mistake.—Your obedient servant,

BANISTER FLETCHER.

To the Editor of "The Times,"—

SIR,—The dignified protest made by the Royal Institute of British Architects against the danger of rushing into a hasty and ill-digested scheme for Charing Cross Bridge deserves the widest consideration and attention. For over 20 years the architectural profession has pressed for a road bridge at Charing Cross worthy of its position, and it is a cause for serious anxiety and disquiet that, after all these years, there should be a possibility of London having thrust upon it a proposal of immense importance, the details of which have not been properly or fully considered.

The proposal which is now seen by the public for the first time is an entirely different one from that recommended by the Royal Commission on Cross River Traffic. It is not the plan which was recommended by the advisory engineers appointed by the Ministry of Transport. It has, so far as is known, not been considered or recommended by the engineer recently appointed to carry it out, and the scheme was apparently prepared before his appointment. Sir Banister Fletcher's letter shows that the present proposal is entirely against the weight of architectural opinion, and the implications of the scheme have not, so far as is known, been considered by any town-planning authority. It cannot, in its latest form, have been fully considered in detail even by the London County Council themselves, and it was put forward at the last meeting before the recess frankly in utter weariness of the flesh, in order to get what was called finality, the sole argument in its favour being the suggestion that it is the only scheme the railway company will accept. The shareholders did not by any means unanimously take this view, and the passengers have not even been consulted in any shape or form.

If the scheme goes through in its present form the future replanning of the Surrey side will be rendered almost impossible. Waterloo Road and York Road will both be turned into dark and dismal thoroughfares and for all time the railway viaduct across South London will perpetuate miles of unnecessary slums and derelict property. The present difficulty of all connected with the scheme is the insistence of the railway in keeping above ground. An underground loop railway from London Bridge to the City, Charing Cross, and Waterloo would remove most of the difficulties and leave the sites of the present railway and its bridges free for the development of this all-important part of London on sound lines.—Yours faithfully,

W. R. DAVIDGE,
Past President, Town Planning Institute.

Allied Societies

(The attention of Members of the Allied Societies is particularly called to this page)

ESSEX, CAMBRIDGE AND HERTS SOCIETY OF ARCHITECTS.

Hertfordshire Chapter.

The inaugural meeting of the Hertfordshire Chapter of the Essex, Cambridge and Herts Society of Architects was held at St. Albans on 30 October, when the party was met by the Very Rev. the Dean of St. Albans at the West Front of the Cathedral.

The members and their friends were conducted round the Abbey by Sir Charles Nicholson. They then visited places of interest in the city, and at 4.30 were given a civic reception in the Town Hall by the Mayor and Corporation, who entertained them to tea.

After tea a meeting was held at which Mr. Clough Williams-Ellis gave an address on the preservation of the amenities of a city like St. Albans.

The company then adjourned to the Red Lion hotel for dinner, the chair being taken by Mr. Percival C. Blow [*A.*], who was supported by the Mayor, the Dean, Mr. Ian MacAlister, and representatives from the other Chapters in the district.

ESSEX, CAMBRIDGE AND HERTS SOCIETY OF ARCHITECTS.

West Essex Chapter.

A conference was held at Romford on Monday 4 November, under the auspices of the West Essex Chapter of the Essex, Cambridge and Herts Society of Architects, Mr. H. T. Muggeridge, M.P. for the Romford Division, in the chair.

The Romford Rotary Club, under the presidency of Mr. A. W. Gay, entertained the conference to lunch, when Mr. S. Phillips Dales [*F.*], gave an address on "Open Spaces."

Mr. Dales said the subject was one of great importance to Romford, and he was by no means satisfied with the progress made in the years since the Rotary Club took the matter up. He thought the Councils would be wise to say what their ultimate aim was, and whether they desired that the rapidly narrowing strip of land between Romford and Chadwell Heath should be kept open. The value of open spaces was an important thing indeed to the public. He referred to visits paid to the Hudson Cañon in America, where a road cut in the face of the rock enabled a long hidden view to be exposed, and to Prague, where there was a wide thoroughfare much like the Romford Market Place, with its slope crowned by the National Museum, as the Market Place would be when they had their Town Hall. Here they had an open space which the people in the future could make a really beautiful place. It was the work of this generation to keep the open spaces, and he would rather see money spent in that way than in stone war memorials.

He said he hoped Mercury Gardens would never be parted with by the Council for buildings, because he could see it made into a very beautiful place, where the man who was tired with the bustle of life in the town could find a resting-place. Regarding Raphael Park, it was about 20 years ago that the Spoon Pond lost its water, when a deep sewer was put in at Gidea Park. When that happened he went to the spot, and he could not help but exclaim at its possibilities for development. Tennis courts had been put there, but he would like to see at the end of the straight portion a pavilion facing bowling greens and courts to form a background for a raised platform, which would take an open-air orchestra, or where children's pageants could be performed. He would like to see there a bathing pool for the children who could not get to the seaside, with a shore where they could make their castles. The earth could be raised to make a natural bank, and cypress or other shrubs could be planted to form a screen from the north-easterly winds. It would make a magnificent forum.

Mr. Dales said the Council were to be congratulated upon securing the playgrounds they had, particularly the Cottons recreation ground. If he were a boy what he would miss there would be the jungle land. He would like to see some more land acquired and left in its natural state. The Hornchurch Council had acquired Hylands Park, and some fine planning was to be done in its lay-out, upon which they were to be congratulated. They had also just had a windfall in the shape of a town hall. He was a Hornchurch ratepayer, and he did not think he would grumble if some of the money saved by this gift were devoted to the acquiring of open spaces. Nor did he think the public of the district would grumble if they were shown what it would mean to their children.

After touching upon allotments the speaker referred to building on the arterial roads, and suggested that it would be better to build upon roads which ran at right angles to these thoroughfares. It would not be a great hardship to leave some of the land for beautification purposes, and then the motorists would have no excuse for speeding along roads they called uninteresting. The Crown lands which existed between Romford and Chadwell Heath were being filled with buildings, and he had approached their Member of Parliament upon the importance of leaving the land free.

Councillor Durrant, Mr. J. Portnoi and Mr. E. Lambert took part in the discussion that followed. Councillor Hole proposed a vote of thanks to Mr. Dales. In the course of his speech he said that if they could create public opinion by this discussion they were going to do some good, even if they only got a half of all that had been suggested. As regards the Crown lands, the Council had already, through the instrumentality of Councillor England, sent to the Government a request that they should preserve the belt of land surrounding their district, and he commended that to their Member for strengthening their attitude. He also asked the representatives of Hornchurch Council to back them up and to send a similar representation from their district. He did not think the Urban Councils had been backward in endeavouring to provide open spaces. Romford Council had purchased land from the main road to Carlton Road to add to their park and they were already in possession of Cottons; and a year ago they acquired more acres in the north to utilise as another public park. Hornchurch Council had acquired land in Park Lane, Hylands Park, Langtons, and other spaces in South Hornchurch and Harold Wood.

Mr. Muggeridge, in seconding the vote of thanks, said there was a great responsibility resting upon the Urban Council, for what they did now would decide the future of the place. Those who were real local patriots would see it was for them to make the district committed to their care more beautiful than it was to-day, and see that its beauty was retained for posterity. He had been in communication with the Commissioner of Crown lands, Mr. Noel Buxton, and although nothing definite had yet been done, the answer he received was very favourable. As one who had acquired a fondness for their old Market Place, and the district, which suggested one of the old posting towns they read of in the pages of Dickens, he hoped they would preserve its best features and improve the town for future generations.

After the luncheon the party boarded a number of cars supplied by Rotarians, and, headed by Councillor Hole, made a tour of the refuse dumps to inspect the Bradford scheme of destruction as operated, and of the housing estates.

Tea at the Red Triangle Club at Romford was followed by a conference on "Better Houses for the People," with Mr. Muggeridge in the chair.

Mr. Muggeridge, in opening the discussion, said it had been said that the housing problem was solved as soon as

one had got one's own house, but the problem was more serious than that. It was to find suitable houses for those who could not, and perhaps ought not, to become purchasers of their houses. The man who earned about £3 per week was entitled to a home of his own, if possible with a bit of land round it.

Councillor England said that houses built under the Addison and other schemes were too expensive and, even if not, the occupier had to go on paying rent, or move at a time of life when increased comfort should come his way. What was needed was decent cottage accommodation at a minimum cost. The Small Dwellings Acquisition Acts only empowered loans up to 90 per cent. of the value, but the Councils ought to be able to lend more. High rates and taxes were keeping back architectural development.

Councillor Crowe said the subsidy helped to provide houses, but not at a price which the applicant could afford to pay. He felt that the subsidy had not reduced the cost of building, but had enhanced it. The speaker referred to "indiscriminate" laying out of estates with no thought except to get as many houses on the frontage as possible. Lay-out should be controlled with a view to preserving the amenities of the countryside.

Councillor Hole said he did not see how the difficulty in regard to houses for men earning £3 a week could be met by the local governing body. The provision of such houses was more a national matter which should be met out of national funds.

THE GLOUCESTERSHIRE ARCHITECTURAL ASSOCIATION

A meeting of the Gloucestershire Architectural Association was held at the Spread Eagle Hotel, Gloucester, on 20 November, Mr. Thomas Falconer, F.R.I.B.A., President, being in the chair.

After dinner, Mr. F. J. Butler, of Wolverhampton, representing Messrs. Josiah Parkes and Sons, Ltd., and Messrs. Chubb and Sons Lock and Safe Co., Ltd., gave a lecture on "Locks and Lock Making." The lecturer traced the history of lock making from Egyptian times, and explained the construction of various types of modern locks, including various combination and time locks for strong room doors.

The lecture was illustrated by lantern slides, including photographs of many beautiful lock cases and keys of mediæval and Renaissance craftsmanship.

A vote of thanks to the lecturer was passed on the proposition of Mr. A. Linton Iredale, and seconded by the Honorary Secretary, Mr. Harold F. Trew.

MANCHESTER SOCIETY OF ARCHITECTS.

The annual dinner of the Manchester Society of Architects was held in the new Masonic Temple designed by Dr. Percy Scott Worthington. Dr. Worthington has been chosen by the R.I.B.A. for presentation to the King as Royal Gold Medallist for next year.

Mr. J. T. Halliday, president of the Society, in his opening remarks congratulated Dr. Worthington upon being chosen for the highest honour which architects could pay. Sir Banister Fletcher, President of the Institute, said it was a magnificent thing for Manchester that it should have produced a Royal Gold Medallist, and it was a great pleasure to see Dr. Worthington "in the latest creation of his fertile brain." He congratulated the man who had come by right of his work into so great a gallery of architects. Mr. Vincent Harris, the architect of the Town Hall extension, added his congratulations.

Mr. Harris's speech was chiefly concerned with the necessity for open competition for large architectural works such as that planned by the Government, and he suggested that this was the only way to use fully the men now trained in the schools. He was, he said, a confirmed evangelist of the system of open competition. It had produced such noble piles as St. George's Hall, Manchester Town Hall, Leeds Town Hall, Liverpool Cathedral, National Museum of Wales, National Library of Wales, Port of London Building, the London County Hall, and other buildings, all striking contributions to our national architecture and all the work of young men.

Manchester had always been the school of advanced thought, and at the start of modern municipal government, when it required a building to house its administrative departments, it was broadminded enough to throw open the scheme to competition. The successful design was the forerunner of those town halls which had offices surrounding a large public hall. Some time after London was able to follow the example of the city and embark on the splendidly conceived plan of the late Mr. Ralph Knott, which was only now being brought to fruition.

The Institute and its Allied Societies must see that the competition system was kept alive. In a recently inspired speech by a Minister of a Government department it was strongly inferred that future national buildings would be carried out departmentally. That system was a menace both to the art of architecture and to its profession.

Mr. Halliday proposed the toast of "The Institute and Allied Societies." He recalled that Sir Banister Fletcher at the beginning of his year of office had entered the lists with a letter upon the proposed Charing Cross Bridge. That suggested it was going to be a year of fights. There was also the business of the great Government building on the Embankment to be decided, and he believed Sir Banister would prove to the Government that there were some observances of sportsmanship in these things.

Sir Banister Fletcher, in replying to the toast, spoke of the effect of tradition upon architectural usage. He doubted whether there had ever been a time which offered such opportunities to architects. When one considered the novel types of structure which could be used, it seemed clear that architects had a great possession. There seemed in the past no time in which architecture and the community were so bound up as at present. He also spoke of the work of the Greater London Regional Planning Committee. A deputation had recently gone to Mr. Arthur Greenwood, and had from him an assurance that a new Town Planning Act would shortly be attempted which would make it much more easy for such committees to take the summary action they needed in face of present difficulties. They needed sufficient powers to deal with amenities of the countryside.

Mr. James R. Adamson, in proposing the toast of the "City of Manchester," said that in that city many fine new modern buildings were springing up which could at least hold their own with those of any part of the country.

Councillor Noton Barclay, the Lord Mayor, replied for the city, and Alderman Will Melland replied for the guests.

SOUTH WALES INSTITUTE OF ARCHITECTS CENTRAL (CARDIFF) BRANCH.

About 250 past and present students of the Welsh School of Architecture and their friends were present at a dance arranged by the School of Architecture Club, which is affiliated with the South Wales Institute of Architects (Central Branch), on 16 November in the Technical College, Cardiff.

The students of the Welsh School of Architecture designed and carried out an effective scheme of decoration in black and orange, with the use of flood lighting, for the Assembly Hall, in which the dance was held.

Among those present were Mr. C. J. Bartlett, Chairman of the School of Architecture Club and President of the Students' Union Council; Mr. H. J. Hughes, Secretary of the School of Architecture Club; Mr. J. W. Bishop, Mr. C. Thatcher, Mr. J. P. Ward and Miss M. Murray, members of the Organising Committee; and Mr. W. S. Purchon, M.A., A.R.I.B.A., Head of the Welsh School of Architecture.

WEST YORKSHIRE SOCIETY OF ARCHITECTS.

Mr. G. H. Foggitt, F.R.I.B.A., delivered his presidential address before a meeting of the West Yorkshire Society of Architects, on 21 November, at the Hotel Metropole, Leeds. In the course of his remarks he observed:

R.I.B.A.—Turning for a moment to the parent Society—the Royal Institute of British Architects—I would refer to the Development Scheme which came before us some months ago. The proposals then put forward received the sanction of a large majority in the postal vote taken on the subject, and the effect of this Development Scheme should be ultimately to serve the best interests of architecture and architects, as well as to strengthen the position of the Royal Institute in representing the profession.

The Bill for the Registration of Architects has not yet been placed on the Statute Book. The measure has been passed through the House of Lords, and has been approved in principle by the House of Commons and, though it has not secured a place in the ballot for this Session of Parliament, it is confidently hoped that it will not be long before success crowns the efforts of those who have worked so perseveringly for its achievement.

A subject which is at present receiving the careful consideration of the R.I.B.A. is the growth of official architecture—which, it is contended, is not in the best interests of the Art of Architecture and its advancement.

It is a matter of general interest that the R.I.B.A. has recently acquired an important site in Portland Place for its new headquarters and it has been decided by the Council of the R.I.B.A. that an open competition shall be held for the selection of an architect in due course. The R.I.B.A. Council has thus wisely decided to follow the advice it gives to public bodies in the case of important new buildings. We shall all look forward with interest to see the result of the competition in this case and an excellent opportunity will be given to some budding aspirant to win his spurs. Traditionalist, or modernist—which will win ?

Architectural Education.—The standard of architectural education in this country was never higher than it is to-day. The raising of the standard is manifesting itself more and more clearly each year, and this is surely as it should be, and is a fact of great encouragement to all who really care for the highest interests of our art.

We all recognise that there is a strong modernist spirit abroad to-day. I should like to express a word of warning lest the striving for novelty be allowed to get the better of our judgment. The study of traditional work should not be jettisoned because the extremists of modern design seem to have travelled far from it. A sound knowledge of, and appreciation for, the work of the past should not cramp our style, if we have originality and imagination. If we have not these gifts of originality and imagination, then surely it is better to work on safe lines rather than to let a striving after novelty and eccentricity get the better of us.

Matters of Local Interest.—In Leeds, the past twelve months has been interesting in that it has seen signs of material progress being made with the construction of the new street which, it is now decided, is to be called The Headrows. We are able to see the first of the buildings on the north side of that street in the premises of the Leeds Permanent Building Society's new headquarters, of which our Vice-President, Mr. G. W. Atkinson, is the architect. At the junction of The Headrows with Vicar Lane, another building is rising under the supervision of Messrs. Kitson, Parish and Ledgard and Pyman, and between the two buildings named, demolition is proceeding of old property in readiness for the erection of further new buildings.

Schemes are afoot for other buildings on the north side of the same street, and we were pleased to learn that Mr. Atkinson had been commissioned to design the new store for Messrs. Lewis, of Manchester. The progress of the various buildings is being and will be watched with much interest, and, in spite of criticisms which we may have made or may make, the Improvements Committee of the Leeds Corporation is to be congratulated in that it has had the courage and the vision to carry the scheme through.

Progress is being made with the Leeds University Scheme and if the first of the new buildings by Messrs. Lanchester, Lucas and Lodge is a criterion of what the finished scheme will be, Leeds will have a University housed in a manner, and with a dignity and beauty well worthy of its standing in the world of Education.

In Bradford, the competition recently held for the planning of the central area is of interest and illustrations of the premiated designs have within the last week or two appeared in the Press. Mr. Eric Morley has recently completed the Chamber of Commerce building which was opened little over a week ago by the Prince of Wales. Mr. Morley is also busy with the erection of the Bradford Infirmary—a work of considerable magnitude. I merely mention these few buildings being rather more prominently before us at the moment.

Not many days ago the second part of the Leeds and Bradford Regional Town Planning Report was published, a wide and comprehensive report, with maps covering the area in which practically all of us live and work. This report should be carefully studied and we should make ourselves *au fait* with the proposals and recommendations there set forth as they may ultimately have a far reaching effect on the part of the West Riding when the various authorities prepare their schemes under the Town Planning Acts.

Rural England.—Owing to the active interest and the publicity given by the Press, these words immediately bring to our minds the campaign which is being increasingly carried on to avoid the spoliation of the countryside.

Just before the General Election, on 8 May last a letter appeared in *The Times* signed by the leaders of the three great political parties in support of the C.P.R.E. movement—giving evidence, if such were needed, of the wide appeal of the preservation of the countryside.

In July we held an exhibition at the Art Gallery, under the auspices of the Leeds Civic Society and our own Society, of material demonstrating in no uncertain way some aspects and examples of the disfigurement of the countryside. The Technical press, by publishing illustrations and drawing attention to particular offending matters are, in some cases, very materially helping in the movement and we find that some of the great commercial organisations, which have been great offenders, are seeing the error of their ways, and are withdrawing their blatant signs. It was interesting, too, to see, a few months ago, that in a town not many miles from Leeds, a firm was fined for putting up and not removing when called on to do so by the police a sign which, in the opinion of the police, disfigured the landscape.

The fringe of the whole matter has as yet only been touched, but public opinion is being educated and we hope that an evil which is widespread and was growing may effectively be checked.

One hundred and fifty years ago an onslaught of commercialism made upon England was defended upon economic grounds. It made England richer, but it also made the Black Country and the industrial ugliness of Lancashire and Yorkshire ; and we could have had the industrial products without ugliness. To-day, when a similar wave of commercialism is sweeping over the land, it presents a real menace. We can have houses, roads, advertisements, electric cable standards, garages and factories without defacing England, if we will but take the necessary steps. Let us beware, lest for lack of consideration, we make a new England which none of us want and which no one will like when it is made.

The electrification of the countryside brings with it the problem of carrying the supply cables far and wide. The ideal place for such cables seems, of course, to be underground, but if questions of economy render this impossible and overhead cables must traverse the Lake District, it is surely not beyond the powers of our designers to make the supporting lattice towers graceful and beautiful and not necessarily a disfigurement. It is not possible to cover up all traces of man's handiwork, nor should it be thought necessary to do so. We must

have roads, bridges, cables, houses, and it is for us to use all our knowledge and influence to see that such things are seemly and suitable for their respective functions.

The coming of a cheap electric supply throughout the land would do a great deal to help on the question of smoke abatement. It is surprising that legislation has not done more in this direction than it has, but I have no doubt that in a very few years the ordinary coal fire, as we know it, will be superseded by smokeless methods of heating—whether by means of smokeless fuel, gas, electric or coke fires. Great progress has been made in this direction in recent years, and, if properly tackled, the waste products of combustion now shot up into the air by the innumerable chimneys of our domestic and other buildings, could be made to produce great wealth, as so many other waste products in industry have done. We are told that the upkeep of public monuments and buildings would be reduced by at least one-half if a pure and smoke-free atmosphere could be obtained. The figures given for the sootfall in Leeds, in the suburbs, is 168 tons per square mile per annum, and in the industrial districts of Leeds 342 tons per square mile. These figures give striking evidence of the seriousness and extent of the problem to be faced and we, in our own sphere, can do something if we will see to it that, so far as we may, we instal in our buildings fittings which either do not use a smoky fuel or, if they do use such a fuel, they consume their own smoke.

Modern Tendencies and the Modernist Movement.—The remarkable work of recent years, carried out in the various European countries, is bringing home to us the fact that the last word was not said when the Doric, Ionic and Corinthian orders were evolved. Changing methods of construction, the use of new building materials and changing standards of beauty and proportion are all playing their part in this modern movement, and we are coming to realise that, useful though tradition may be and, as I said earlier, necessary though we may count its study to be, if we allow it to be our master our architecture may become, as one writer described it, "like a charnel house, strewn with the detritus of dead epochs."

The beauty of the masterpieces of the past is not denied by the modernist, but he claims that they do not conform to our modern ideas and standards. Ideals change as history shows, our standards of proportion are changing, and the masterpiece of the past may be admired without the desire on the part of the admirer to reproduce it. Mr. Howard Robertson, when speaking to us last session, instanced the Venus de Milo which, though a universally recognised work of art, did not conform to modern standards of female beauty. So in architecture, while the modernist does not necessarily decry the great monuments of the past, he feels that their reproduction does not conform to the modern ideals or requirements.

In this country we have as yet few examples of the work of this school as compared with the Continent. The tendency is perhaps most apparent in the shop fronts which indicate to us that the new spirit is in our midst, whether we admire all its manifestations or not. In many cases the striving after novelty seems to be the predominating factor, but other examples show in a remarkable degree beauty and dignity achieved by the designer's use of a wide range of new materials and of old materials used in new ways.

The use of material is being studied and investigated in ever-increasing degree. Rustless steel, enamels, plywoods, laminated woods, veneers, glass, synthetic stone and marbles: these and other materials are being experimented with and are producing interesting and beautiful results and are opening up great possibilities for the future in their use.

In proposing the vote of thanks, Mr. G. W. Atkinson, a vice-president of the Society, alluded to the wonderful smoke abatement laws in the U.S.A. Standing, he said, on the roof of one of the loftiest skyscrapers of New York, there was no smoke to be seen except that emanating from the power stations.

Mr. Norman Culley seconded the vote.

R.I.B.A. PROBATIONERS

During the month of November 1929, the following were registered as Probationers of the Royal Institute:—

ASHWELL: HAROLD JAMES, 12 Cambridge Terrace, Hyde Park, W.2.

BANHAM: CHARLES THOMAS, 62A Eynham Road, London, W.12.

BECKINGSALE: ALEC, The Corner House, High Street, Westbury, Bristol.

BRANDON: GODFREY, York House, Stanmore, Middlesex.

BURRIDGE: PATRICK FRANCIS, 3 Gains Road, Southsea, Hants.

CHITTY: ANTHONY MERLOTT, Cotton Hall House, Eton College, Windsor.

COOK: VINCENT NEALE, 136 Innes Road, Durban.

COX: JAMES HARRY, Middle Claydon Park, Bletchley, Bucks.

DIXON: MATTHEW TOMBS, Stoney Lane House, Tardebigge, Nr. Bromsgrove.

DODSON: STANLEY EDWARD, 15 Queen Street, Peterborough.

ENGLAND: WILLIAM HENRY OLIVER, 93 Duckett Road, London, N.4.

FOOT: DENIS GEORGE, 40 Clyde Road, Addiscombe, Surrey.

FORDHAM: GEORGE ROBERT, Mill House, Terrington St. Clement, King's Lynn, Norfolk.

FOX: LESLIE VERNON, 155 Castleford Road, Normanton, Yorks.

GEORGE: RONALD WILLIAM, 73 Manor Road, Hastings, Sussex.

GILLESPIE: HAROLD, 4 Lonsdale Street, Belfast, Ireland.

HAWKINS: HAROLD ARCHER, P.O. Box 138, Salisbury, S. Rhodesia, S.A.

HOWARD: DEBORAH BENSON, Pollards, Loughton, Essex.

JEFFREYS: THOMAS REGINALD, 19 Glanbrydan Avenue, Uplands, Swansea, South Wales.

JEFFRYES: THOMAS ARNOLD, College of Art, Edinburgh.

JONES: EDWARD STANTON, 1 Montrose, Harold Street, Hereford.

KOH: CHENG YAM, 22 Buckleigh Road, Streatham Common, London, S.W.16.

LARA: LOUIS GEORGE CHARLES DE, Crown Hotel, Poole, Dorset.

LEWIS: OWEN PRYCE, 25 Venice Road, Durban.

LOCK: CECIL MAX, Queen's Walk, Cassiobury, Watford.

McHARG: SAMUEL, 13 Prestwick Road, Ayr, Scotland.

McKAY: JOSEPH, 8 Clifford Road, Stirling, Scotland.

MITCHELL: BERNARD CROSLAND, "Brookside," West Villas, Stockton-on-Tees.

MOBBERLEY: HAROLD THOMAS, 2 Terrace Street, Harts Hill, Nr. Brierley Hill, Staffs.

MOORCROFT: JAMES RENWICK, "Lyncroft," Cliftonville Road, Belfast (N. Ireland).

MOORE: JOHN ERIC, 60 Marchmont Road, Edinburgh.

MORSE: HORI GEORGE ALFRED, c/o Mrs. A. M. A. Spence, J.P., Fullarton Estate, Adelaide, South Australia.

NISBET: JOHN ATHELSTAN VICTOR, 14 Old Square, Lincoln's Inn, W.C.2.

NISBET: JOHN VERNEY, Easington, Weybridge.

NIXON: JOHN ARVED, 10 Meadow Bank Avenue, Sheffield.

NOVIS: DONALD RICHARD CHARLES, 17 Linden Road, Bexhill-on-Sea.

PARR: GEORGE PERCIVAL, The Cottage, Allesley, Coventry.

PEGRUM: WILLIAM AUBREY, 1 Hillside Road, Birkdale, Southport, Lancs.

POWERS: FREDERIC WALTER, 409 Innes Road, Mitchell Park, Durban.

REYNOLDS : FRANCIS MAURICE, " The Nook," Oughtrington, Lymm, Cheshire.
ROBERTSON : GEORGE, 233, Dalkeith Road, Edinburgh.
RUSHBROOK, SIDNEY GILBERT, 38 The Avenue, Moulsecoomb, Brighton.
SHEEHAN : JAMES WATT, c/o Mrs. Dorrance, 11 Orwell Place, Dalry Road, Edinburgh.
SHOLL : THOMAS, 17 Lilford Road, Camberwell, S.E.5.
SMITH : CHARLES GEORGE WILLIAM, 38 Elmshaw Road, Roehampton, S.W.15.
TURNER : SYDNEY, 16 Inchmery Road, Catford, S.E.6.
TURNER, WILFRID JOHN CARPENTER, Overton Rectory, Hants.
VASUDEV : SRI RAM, 21 Cromwell Road, S.W.7.
WHEELER-CARMICHAEL : SAMUEL DENNIS, 22 Portman Street, London, W.1.
WILES : HAROLD GARDNER, 29 Grosvenor Road, Richmond, Surrey.
WILLIAMS : MORRIS, Gwyon House, North Curry, Taunton.
YOUNG : JAMES DICKSON, 37 Stewart Terrace, Edinburgh.

NOTES FROM THE MINUTES OF THE COUNCIL.

4 *November* 1929

FIRST INTERNATIONAL CONGRESS FOR CONCRETE AND REINFORCED CONCRETE, LIEGE, SEPTEMBER 1930.

Mr. H. D. Searles-Wood [*F.*] was appointed to represent the R.I.B.A. on the Committee which has been set up to make arrangements for the First International Congress for Concrete and Reinforced Concrete to be held at Liege in September 1930.

PRESENTATION TO THE LIBRARY.

The cordial thanks of the Council were conveyed to Mr. Maxwell Ayrton for the gift of his book *Wrot Iron* to the library.

THE FELLOWSHIP.

The Council, by a unanimous vote, elected the following architects to the Fellowship under the powers defined in the Supplemental Charter of 1925 :—

Mr. W. J. Palmer Jones.
Mr. D. A. Stewart [*L.*] (Perth, Scotland).
Mr. L. L. Powell (Brisbane).
Mr. P. A. Oakley (Melbourne).
Mr. P. R. Claridge (Adelaide).

MEMBERSHIP.

Election, 2 *December* 1929.—Nominations for membership were approved as follows :—

As Hon. Fellow—One application.
As Hon. Associate—One application.
As Hon. Corresponding Member—One application.
As Fellows—20 applications.
As Associates—81 applications.

Notices

THE FOURTH GENERAL MEETING.

The Fourth General Meeting (Ordinary) of the Session 1929–30 will be held on Monday, 16 December 1929, at 8 p.m., for the following purposes :—

To read the Minutes of the General Meeting (Business) held on 2 December 1929 ; formally to admit members attending for the first time since their election.

Mr. M. H. Baillie Scott [*F.*] to open a debate on " Are Building Bye-laws Destructive of Rural Beauty ? "

CHRISTMAS HOLIDAY LECTURES ON ARCHITECTURE FOR BOYS AND GIRLS.

The success of the informal talks on Architecture to boys and girls which were given during the Christmas holidays last year and the previous year has emboldened the Council of the Royal Institute of British Architects to arrange a further series for the forthcoming holidays.

At the invitation of the Council, the Hon. Humphrey Pakington [*A.*] has kindly consented to give the talks, which will be illustrated by lantern slides, and he has chosen as his subject " English Architecture " :—

I.—How it began.
II.—How it grew.
III.—What it means.

The first lecture will deal with the growth of the Gothic styles in this country, due to the advance of civilisation and the increasing power of man over his materials.

The second lecture will describe the great awakening of the world in the days of the Renaissance, followed by the Age of Revivals and the Romantic Period, and culminating in Victorian days in the battle of the styles.

Architecture, to be understood, must be approached through History. But while ability to fix the date of a building by its style is interesting and useful, it is not the important thing in the study of architecture, any more than the dates of the Kings are important in history. Just as the chief use of a study of the past is to tell us how to live our own lives, so the chief use of studying old buildings is to tell us how to build to-day.

The third lecture will deal in a simple way with the appreciation of architecture, and special attention will be paid to modern tendencies. Old and new buildings will be contrasted, and it will be shown how each represents its own age. While we can admire the old days, it is no use sighing for them. We do not honour the old architects by copying their work blindly. We honour them when we recognise them as the modernists of their day, striving to represent their own age fitly in their architecture. The important people, in architecture as in everything else, have always been the most advanced.

But though we may consider ourselves advanced to-day, we must remember that the world is still in its childhood ; architecture has hardly begun yet ; we must look back for guidance, but it is still more necessary to look forward, for the future is more important than the past.

The lectures will be given on the following dates :—

Monday, 30 December 1929, at 3.30 p.m.
Wednesday, 1 January 1930, at 3.30 p.m.
Friday, 3 January 1930, at 3.30 p.m.

Tickets for any or all of the lectures may be obtained from the Secretary of the Royal Institute of British Architects, 9 Conduit Street, London, W.1. The tickets are free.

Owing to the limited seating space of the hall it is hoped that application will not be made for more tickets than can be used.

CONDITIONS OF CONTRACT.

In answer to many inquiries made by members regarding the recognised Form of Contract, the minute of the General Meeting (Business) held on 10 June 1929, is reprinted below for information :—

" RESOLVED that this meeting of the R.I.B.A.

after full consideration of the terms of the proposed draft of the New Form of Contract now again submitted as in amendment of the existing and agreed 1909 Form of Contract, is unable to accept the same, but concurrently renews its offer to reconsider the amendment of the 1909 Form where necessary."

ELECTION OF MEMBERS, 7 APRIL 1930.

Associates who are eligible and desirous of transferring to the Fellowship are reminded that if they wish to take advantage of the election to take place on 7 April 1930 they should send the necessary nomination forms to the Secretary R.I.B.A. not later than Saturday, 11 January 1930.

LICENTIATES AND THE FELLOWSHIP.

The attention of Licentiates is called to the provisions of Section IV, Clause 4 (*b*) and (*cii*) of the Supplemental Charter of 1925. Licentiates who are eligible and desirous of transferring to the Fellowship can obtain full particulars on application to the Secretary R.I.B.A., stating the clause under which they propose to apply for nomination.

APPLICATIONS FOR MEMBERSHIP.
ELECTION, 3 FEBRUARY 1930.

The following applications for election have been received. Notice of any objection or other communication respecting the candidates must be sent to the Secretary for submission to the Council prior to Monday, 6 January 1930.

AS HON. FELLOW (1).

LLEWELLYN : SIR WILLIAM, K.C.V.O., P.R.A., Little Blundell House, Campden Hill, Kensington, W.8. Proposed by the Council.

AS HON. ASSOCIATE (1).

BLOUNT : COLONEL EDWARD AUGUSTINE, C.B.E., F.S.I., Chevalier de la Légion d'Honneur. Agent to Lord Howard de Walden. Southwell, Worth, Sussex. Proposed by the Council.

AS FELLOWS (10).

ARCHER : HOWARD DENNES [*A.* 1919] P.O. Box 58, Nairobi, Kenya Colony. Proposed by T. W. Troup, Joseph Hill and W. Harding Thompson.

BURNETT : PERCY VIVIAN [*A.* 1921], 107 Jermyn Street, S.W.1; 66 Pembridge Villas, W.11. Proposed by Sir Banister Fletcher, Digby L. Solomon and M. N. Castello.

EPRILE : CECIL JACOB [*A.* 1921], 107 Jermyn Street, S.W.1 ; 74 Wildwood Road, N.W.11. Proposed by Arthur Keen, S. B. Caulfield and Basil Oliver.

FITZGERALD : GEORGE EDMONDS [*A.* 1909], 35 Gresham Buildings, Pretoria, South Africa ; 833 Church Street, Arcadia, Pretoria, South Africa. Proposed by J. Lockwood Hall, Robert Howden and Ernest M. Powers.

HASELDINE : CYRIL FRANCIS WILLIAM [*A.* 1919], King's Walk, Nottingham ; Papplewick, Nottinghamshire. Proposed by George H. Widdows, Alfred J. Thraves and H. Alderman Dickman.

And the following Licentiates who have passed the qualifying Examination :—

ADAMSON : JAMES ROBERTSON, 19 Silverwell Street, Bolton ; 417 Church Road, Bolton. Proposed by John B. Gass, Arthur J. Hope and R. Hermon Crook.

BIRD : HUGO RITCHIE, St. Thomas' Gate, Brentwood, Essex ; Inglewood, Mount Avenue, Hutton, Essex. Proposed by Chas. J. Dawson, Wykeham Chancellor and Henry W. Allardyce.

OGDEN : CLEMENT COPELAND, 42 Silver Street, Leicester ; The Cottage, Ashfield Road, Leicester. Proposed by J. Stockdale Harrison, Arthur H. Hind and Albert Herbert.

SCOTT : WILLIAM, 19 Silverwell Street, Bolton ; "Kendalmere," 177 Chorley New Road, Bolton. Proposed by John Bradshaw Gass, Arthur J. Hope and Joseph Foy.

And the following Licentiate who is qualified under Section IV, Clause 4 (c ii) of the Supplemental Charter of 1925 :—

LAKE : GEORGE FREDERICK, 62 Park Avenue North, N.8. Proposed by H. W. Hetherington Palmer, Henry Tanner and Fredk. R. Hiorns.

AS ASSOCIATES (7).

BAYNE : OSCAR ANDREW [Final], 100 Tooronga Road, Hawthorn, Melbourne, Australia. Proposed by Kingsley A. Henderson, Evan Smith and H. W. Tompkins.

CHAPLIN : SIDNEY GEORGE [Final], 27 Doughty Street, W.C.1. Proposed by Professor A. E. Richardson, E. Stanley Hall and Arthur Stratton.

HEATH : CLIVE PATTERSON [Passed five years' course at Sydney University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice.], 48A Addison Road, Manly, Sydney, Australia. Proposed by Professor Leslie Wilkinson, Sir Charles Rosenthal and Alfred S. Hook.

HIGHET : GRAEME IAN CAMPBELL [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice], Bamborough, Horsell, Woking, Surrey. Proposed by Howard Robertson, J. Murray Easton and E. Stanley Hall.

HIRST : WILLIAM [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice], 24 Davenport Road, Durban, Natal, South Africa. Proposed by Howard Robertson, J. Murray Easton and Robert Atkinson.

PESKETT : HARRY MICHAEL [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice], 2 Ranelagh Road, Redhill, Surrey. Proposed by Howard Robertson, Ernest G. W. Souster and J. Murray Easton.

WHITTINGHAM : ARTHUR BENSLY, M.A. (Cantab.) [Passed five year's course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice], The Bishop's House, Ipswich, Suffolk. Proposed by Howard Robertson, E. H. Evars and Louis de Soissons.

Queries and Replies

[A large number of questions on points of professional practice and technical interest are addressed to the Practice and Science Standing Committees and to other Committees of the Institute.

The Council, on the recommendation of the Science Standing Committee, have decided to adopt the procedure of publishing such queries in the JOURNAL when on matters of general interest, together with the replies of those members who, having special knowledge and experience of the particular questions, have been asked to express their opinions upon them. The scheme is based upon that adopted by the Surveyors' Institution.

The identity of the member seeking the information will not be disclosed, but the replies published will be signed by the members who have supplied them.]

Query No. 2

THE FIRE-PROOFING OF THATCH.

Can you give me a recipe to render thatch fire-resisting? I should be much obliged if you could furnish me with such information, as I am confident that if people could be reassured that by the employment of some fire-proofing material the thatch could be rendered less combustible there would be more thatching done than is the case to-day.

Reply to Query No. 2.

The formula I recommend for fire-proofing thatch is one of the following :—

28 lb. Sulphate of Ammonia.
14 lb. Carbonate of Ammonia.
7 lb. Lump Borax.
7 lb. Boracic Acid.
14 lb. Lump Alum.
500 lb. Water (must be hot to dissolve).

Applied from the underside of the finished roof, use spraying machine, and from the outside.

Or—The bunches may be dipped into a tub (6 inches to 9 inches will do) butt-end. This means much labour, and each bunch has to be laid on planks in rows or rings to dry.

Fires often occur inside the roof ; therefore in my opinion the spraying process is the best, as the woodwork as well as the exposed thatch gets a good soaking. The machine should be worked at 100 to 150 lb. pressure.

Charles F. Skipper [*F.*].

Competitions

LIMITED COMPETITIONS.

The attention of the Competitions Committee has been called to an attempt which was made recently by an employing authority to infringe the spirit of the last paragraph of clause 10 of the R.I.B.A. Competition Regulations while observing the letter.

This paragraph reads :—

" Provided that nothing in this Clause shall prevent two or more members of the Royal Institute from giving advice or preparing sketch plans for the same project for a private client, if the expenditure proposed does not exceed the sum of £12,500, and if each of the members so invited be paid an agreed fee."

In the case in question a number of the local architects were invited to submit plans for a fairly important project for a fee of £1 1s. each.

The Competitions Committee express the hope that in loyalty to the profession in general and to their own interests in particular, members will insist on the payment of a reasonable fee in such cases.

ABERYSTWYTH : PROPOSED WINTER GARDEN AND BAND PAVILION.

The Aberystwyth Corporation invite architects to submit, in open competition, designs for a Winter Garden and Band Pavilion.

Assessor : Mr. Arnold Thornely [*F.*].

Premiums : £100, £70 and £30.

Last day for receiving designs, 1 January 1930. Conditions of the competition may be obtained on application to the Town Clerk, Town Hall, Aberystwyth. Deposit £2 2s.

ACCRINGTON : NEW POLICE AND FIRE STATIONS.

The Accrington Corporation invite architects to submit, in open competition, designs for new Police and Fire Stations.

Assessor : Mr. Herbert J. Rowse [*F.*].

Premiums : £250, £150 and £100.

Last day for receiving designs, 28 February 1930. Conditions of the competition may be obtained on application to the Town Clerk, Town Hall, Accrington. Deposit £2 2s.

GOSPORT : PROPOSED PLEASURE RESORT AND GROUNDS.

The Council of the Borough of Gosport invite the submission of schemes for the lay-out of a portion of the Stokes Bay area as a pleasure resort, with public walks and pleasure grounds.

Conditions of the competition and a plan of the estate may be obtained on application to the Town Clerk, Town Hall, Gosport. Deposit £2 2s. [The conditions have not yet been submitted to the Competitions Committee.]

GUILDFORD : NEW MUNICIPAL BUILDINGS.

The Guildford Corporation propose to invite local architects to submit, in competition, designs for new municipal buildings.

Assessor : Mr. T. S. Tait [*F.*].

Premiums : £50 and £25.

[Conditions are not yet fully settled.]

LIVERPOOL : PROPOSED PIER HEAD IMPROVEMENTS.

The Liverpool City Council propose to offer premiums of 1,000 guineas and 500 guineas in connection with a competition for the improvement of the amenities of the Pier Head.

[Conditions are not yet available.]

SWANSEA : MUNICIPAL BUILDINGS.

The Swansea Corporation invite architects to submit, in open competition, designs for new municipal buildings.

Assessor : Mr. Henry V. Ashley, V.-P.R.I.B.A.

Premiums : £750, £500, £300 and £200.

Last date for receiving designs, 18 January 1930. Conditions of the competition may be obtained on application to the Town Clerk, Town Hall, Swansea. Deposit £2 2s.

ANZAC MEMORIAL BUILDING, SYDNEY, N.S.W.

The Trustees of the Anzac Memorial Building invite competitive designs for an Anzac Memorial to be erected in the City of Sydney, New South Wales.

The qualification of competitors is defined in the conditions of competitions as follows :—

" The competition is limited to Australians who are legally qualified as architects in New South Wales or who are legally qualified to practice architecture outside of New South Wales provided that no competitor shall be employed as architect to the work until he has been duly registered as a legally qualified architect in New South Wales or until other arrangements, satisfactory to the Trustees and to the Board of Architects of N.S.W., shall have been made.

" Nothing in these conditions shall preclude the association of an Australian sculptor with a competitor either during the competition or in the execution of the work.

" For the purpose of this competition ' Australian ' shall mean a natural born British subject who has practised or worked in Australia either as a principal or an assistant. Provided that no Australian soldier within the meaning of Part 4 of the Australian Soldiers' Repatriation Act 1920 shall be excluded by this clause."

The competition will be conducted in two stages; the closing date for the first stage is 24 January 1930. The cost of the Memorial is to be £75,000. The conditions of competition have been approved by the Institute of Architects of New South Wales.

Conditions of competition may be obtained from the office of the Trustees of the Anzac Memorial Building, 3rd floor, Wingello House, Angel Place, Sydney, or from the offices of the Institutes of Architects in the various Australian States, or from the office of the Agent-General for New South Wales, Australia House, London.

OLYMPIA, LONDON: "PAVILION OF LIGHT."

The *Daily Mail*, in conjunction with the General Electric Company, Ltd., is organising a competition in connection with the lighting, heating, decorating and furnishing, and electrical equipment of the rooms of a "Pavilion of Light," which will be erected at the Ideal Home Exhibition at the Olympia, London, in March 1930.

Jury of Assessors:

Sir Edwin Lutyens, R.A., F.S.A. [*F.*].
Sir Duncan Watson, J.P., M.I.E.E.
Mr. Philip Connard, R.A.
Mr. Oliver P. Bernard.
Mr. Douglas G. Tanner [*L.*].
Mr. G. G. Wornum [*F.*].

Premiums: For each room, 100 guineas, 25 guineas, 20 guineas.

Last day for receiving designs: 14 December 1929.

Conditions of the competition may be obtained on application to the *Daily Mail* Electrical Competition, Carmelite House, E.C.4.

Members' Column

CHANGE OF ADDRESS.

MR. C. TERRY PLEDGE has moved to 56 Sherwood Way, West Wickham, Kent.

MESSRS. MACLAREN, SOUTAR AND SALMOND.

MRS. D. W. GALLOWAY begs to intimate that the Architectural and Surveying Practice of her late husband will be continued at 2 Market Street, Brechin, by Messrs. Maclaren, Soutar and Salmond, F.F.R.I.B.A., F.S.I., 15 South Tay Street, Dundee, who are authorised to collect the professional accounts due to the late Mr. Galloway.

PRACTICE FOR SALE.

A large Provincial Practice for Sale in Southern Counties.—Apply Box 2911, c/o The Secretary R.I.B.A., 9 Conduit Street, London, W.1.

COLLABORATION WANTED.

A.R.I.B.A., experienced decorative designer and craftsman, would collaborate with architects in the design and execution of exterior and interior treatments of buildings.—Box 9299, c/o The Secretary R.I.B.A., 9 Conduit Street, London, W.1.

OFFICE ACCOMMODATION WANTED.

WANTED, small office, separate entrance, near Bedford Square, Gower Street, Euston Road, Marylebone Road or Upper Baker Street. Rent about £30 per annum inclusive of light, heat and cleaning.—Apply Box 1120, c/o The Secretary R.I.B.A., 9 Conduit Street, London, W.1.

OFFICE ACCOMMODATION.

PROVINCIAL Architects and Surveyors requiring a City address (near Law Courts), or office for interviews, etc., should apply to "Architect," 19 Falcon Court, Fleet Street, London, E.C.4.

SMALL furnished room, suitable for young architect or quantity surveyor, is available in the West-end offices of an architect, F.R.I.B.A., at an exceptionally moderate rental in exchange for small services rendered. Telephone, gas, electric light, cleaning included. —Reply Box 1690, c/o The Secretary R.I.B.A., 9 Conduit Street, London, W.1.

Minutes III

SESSION 1929–1930.

At the Third General Meeting (Business) of the Session 1929–1930, held on Monday, 2 December 1929, at 8 p.m.

Sir Banister Fletcher, F.S.A., President, in the chair.

The attendance book was signed by 14 Fellows (including 8 members of Council), 8 Associates (including 3 members of Council), and 4 Licentiates (including 3 members of Council).

The Minutes of the Ordinary General Meeting held on 18 November 1929 having been published in the JOURNAL, were taken as read, confirmed, and signed as correct.

The Hon. Secretary announced the decease of:—

David Wishart Galloway, elected Licentiate 1911, Fellow 1929. Past-President, Dundee Institute of Architects;

Edgar Horace Heathcote, transferred to Fellowship 1925;

William Lister Newcombe, elected Fellow 1880, transferred to Retired Fellowship in 1926;

Charles Bernard Benson, transferred to Licentiate Class in 1925;

and it was *Resolved* that the regrets of the Institute for their loss be entered on the Minutes and that a message of sympathy and condolence be conveyed to their relatives.

The following member attending for the first time since his election was formally admitted by the President:—

George Dudley Harbron [*F.*].

The following candidates for membership were elected by show of hands:—

AS HON. FELLOW (1).

Howard de Walden and Seaford: Lord, Thomas Evelyn Scott-Ellis.

AS HON. ASSOCIATE (1).

Stott: Sir Philip Sidney, Bart., F.S.A., Broadway, Gloucestershire.

AS HON. CORRESPONDING MEMBER (1).

Wanscher, Vilhelm, M.A., Professor of the History of Art in the Royal Academy at Copenhagen: Honorary Member of Akademisk Architekeforening at Copenhagen; Member of the Kongilig Norske Videnskabers Selskab at Trondhjem; Cav. Corona d'Italia; Copenhagen.

AS FELLOWS (20).

Broad: Malcolm Charles [*A.* 1918], Montevideo, Uruguay.
Cowderoy-Dale: Frederick Charles [*A.* 1921], St. Leonards-on-Sea, Sussex.
Harris: Philip Capes [*A.* 1914], Zanzibar, East Africa.
Hooper: Charles Owen [*A.* 1920], Hankow, China.
Macfarlane: George Gordon, B.Sc., M.C. [*A.* 1921].
Minty: Robert James Hugh [*A.* 1922].
Mullins: Geoffrey Thomas [*A.* 1918].
Newman: Percival Corney, F.S.I. [*A.* 1902].
Nicholson: Frederick William [*A.* 1912], Aintree, Liverpool.
Stockdale: William [*A.* 1907], North Shields.
Strickland: Harley Clarence Wilfrid [*A.* 1919], Brecon.
Vernon: Frederick Austin [*A.* 1920].

And the following Licentiates who have passed the qualifying Examination:—

Clarke: Godfrey L., Bradford, Yorks.
Salmond: William, F.S.I., Dundee.
Tanner: Douglas George, Birmingham.

And the following Licentiates who are qualified under Section IV, Clause 4 (c ii) of the Supplemental Charter of 1925:—

Davies: Charles Gilbert, Shanghai, China.
Gunson: Ernest, F.S.I., Manchester.
Hamilton: George Douglas.
Jenkins: Thomas, J.P., Burton-on-Trent.
Liddle: Edwin Fewster Waugh, Newcastle-upon-Tyne.

AS ASSOCIATES (81).

Ashworth : Henry Ingham, B.A. [Passed five years' course at Manchester University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Poynton, Cheshire.

Barker : Frances (Miss) [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice].

Bartholomew : George [Final], Falkirk, Stirlingshire.

Beck : Richard Theodore [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice].

Bradley : Frank [Final], Bolton, Lancs.

Breakwell : John [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice].

Brown : Robert Smart [Passed five years' course at Robert Gordon's Colleges, Aberdeen. Exempted from Final Examination after passing Examination in Professional Practice], Aberdeen.

Buchanan : James Wardrop [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice], Brighton.

Bunyan : James [Passed five years' course at Glasgow School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Glasgow.

Collmann : Leonard John [Final], Hampton-on-Thames.

Coote : Lionel Francis Russell [Final], Gerrards Cross.

Crabtree : William, Dip. Arch. (Liverpool) [Passed five years' course at Liverpool University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Doncaster.

Crosby : Edmund Lionel [Final].

Cruickshank : Alexander James [Passed five years' course at Robert Gordon's Colleges, Aberdeen. Exempted from Final Examination after passing Examination in Professional Practice], Gannochy, Perth.

Culpin : Clifford Ewart [Final], Ilford.

Deolaliker : Ganesh Bhikaji [Special Examination], New Delhi, India.

Douglas : Percival Howard [Passed five years' course at Robert Gordon's Colleges, Aberdeen. Exempted from Final Examination after passing Examination in Professional Practice], Watford.

Dow : John Sim [Passed five years' course at Robert Gordon's Colleges, Aberdeen. Exempted from Final Examination after passing Examination in Professional Practice], Craigie, Perth.

Dunn : Richard Russell Anthony [Final], Sunderland.

Ecclestone : James Henry [Final].

Eden : William Arthur [Passed five years' course at Liverpool University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Stockton-on-Tees.

Ellis : Harold George, B.Arch. (Liverpool) [Passed five years' course at Liverpool University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Wallasey, Cheshire.

Finnegan : Leonard [Special Examination], Kenton.

Foley : Hugh Valentine [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice].

Forbes : Ian [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice], Chalfont St. Giles.

Fraser : James Milner [Final], Singapore.

Garrett : Alfred John Wilton [Special Examination], Leigh-on-Sea.

Gibb : John James Bayne [Final], Glasgow.

Golding : Alfred [Final], South Shields.

Greenwood : Fred [Final].

Hall : Frederick George Alfred [Final].

Harding : Herbert John, A.R.C.A. [Special Examination].

Hatcher : Basil Ainsworth [Final], Ipswich.

Helm : William Rex [Final], Oldham.

Holt : A. Neville [Passed five years' course at the Liverpool University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], West Kirby, Cheshire.

Hough : George Cecil [Passed five years' course at the Liverpool University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Hoylake, Cheshire.

Jenkins : Gilbert Lawrence Martin [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing the Examination in Professional Practice].

King : William Henry [Final].

Knight : George William [Special Examination].

Knowles : Herbert James, Dip Arch. (Liverpool) [Passed five years' course at the Liverpool University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Plymouth.

Lamb : William [Final], Windsor.

Lane : Howard Ross [Final], Christchurch.

Lewin : Captain Harry Almond [Special Examination], Colombo, Ceylon.

Lightfoot : Brodrick St. Clair, Dip. Arch. (Liverpool) [Passed five years' course at the Liverpool University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Cape Town.

Lovett : William Francis Benjamin [Passed five years' course at the University of London School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice].

Lowes : Alexander John George [Special Examination].

Lowther : Anthony William George [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice], Ashtead, Surrey.

Lubynski : Norman Francis [Final], Cape Town.

MacDonald : Eric Alexander Hector [Final].

Macdonald : George Sutherland [Passed five years' course at Robert Gordon's Colleges, Aberdeen. Exempted from Final Examination after passing Examination in Professional Practice], Elgin, Morayshire.

McLaren : Ian Hastings [Passed five years' course at Robert Gordon's Colleges, Aberdeen. Exempted from Final Examination after passing Examination in Professional Practice], Cults, Aberdeenshire.

Mansfield : John Leslie Stephen, B.Arch. (Sydney) [Passed five years' course at Sydney University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice].

Mant : Cecil George [Final].

Metcalfe : John George [Passed five years' course at the Liverpool University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Liverpool.

Metz : Morris de [Final].

Mitchell : Thomas [Passed five years' course at the Glasgow School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Broughty Ferry, Angus.

Morgan : Brodrick John Morris [Final].

Morris : William Alexander [Special Examination], Weaverham, Cheshire.

Morrison : Robert James [Passed five years' course at Robert Gordon's Colleges, Aberdeen. Exempted from Final Examination after passing Examination in Professional Practice], Aberdeen.

Mowbray : William Bawden [Final], Sutton, Surrey.
Napolitano : Frederick [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice], St. Margarets-on-Thames.
Plant : Walter Geoffrey [Passed five years' course at the Liverpool University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Doncaster.
Poulton : Denis, Dip.Arch. (Liverpool) [Passed five years' course at the Liverpool University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Oxford.
Redwood : Reginald Seymour [Final], Chippenham, Wilts.
Saunders : George Sleith [Final], Leeds.
Scammell : Rodney Quinton [Final], Birmingham.
Shewan : William Wyllie Clark [Passed five years' course at Robert Gordon's Colleges, Aberdeen. Exempted from Final Examination after passing Examination in Professional Practice], Aberdeen.
Simpson : Robert Alison Crighton, B.A.(Cantab.) [Passed five years' joint course at the Cambridge University School of Architecture and the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice], Leeds.
Spencely : Hugh Greville Castle, B.Arch. (Liverpool) [Passed five years' course at the Liverpool University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice].
Statham : Colin Walter [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice], Rickmansworth.
Summerson : John Newenham, B.A.(Arch) [Passed five years' course at the University of London School of Architecture. Exempted from the Final Examination after passing the Examination in Professional Practice], Edinburgh.
Sykes : Cecil George [Final].
Taber : Edwin Atkinson [Final], Leeds.
Tamkin : Arthur Leslie [Final], Torquay.
Thompson : Gerald Leopold [Final].
Tomlinson : Harold, M.A. (Cantab.) [Special Exemption], Cambridge.
Turner : Charles Austin Charlewood [Passed five years' course at the Architectural Association. Exempted from Final Examination after passing Examination in Professional Practice], Sutton, Surrey.
Wailes : Philip Arthur [Passed five years' course at the University of London School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Beaconsfield, Bucks.
Walkden : John Stanley [Passed five years' course at Manchester University School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Manchester.
Waugh : David Stark Reid, Dip.Arch.(Glasgow) [Passed five years' course at Glasgow School of Architecture. Exempted from Final Examination after passing Examination in Professional Practice], Glasgow.
Williams : George [Final], Hull.

The Chairman announced that by a resolution of the Council the following had ceased to be members of the Royal Institute :

AS ASSOCIATE.

Gordon Hayter Crickmay.

AS LICENTIATES.

Frank Jermyn Bowhill.
Frank Webster Holloway.
William Whiteley Kenworthy.
Gottlieb R. C. Muschaweck.

The meeting then proceeded to consider the proposal that the references to the Assessor's Fee should be omitted from the Regulations for Architectural Competitions, and that these references, contained in Clause 1 (paragraphs 1 and 2) of the Regulations should be transferred to the Scale of Professional Charges and the " Directions to Assessors."

Several members having spoken against the proposal, it was put to the vote of the meeting and lost.

The proceedings closed at 8.45 p.m.

Members sending remittances by postal order for subscriptions or Institute publications are warned of the necessity of complying with Post Office Regulations with regard to this method of payment. Postal orders should be made payable to the Secretary R.I.B.A., and crossed.

It is desired to point out that the opinions of writers of articles and letters which appear in the R.I.B.A. JOURNAL must be taken as the individual opinions of their authors and not as representative expression of the Institute.

R.I.B.A. JOURNAL.

DATES OF PUBLICATION.—1929 : 21 December ; 1930.—11, 25 January ; 8, 22 February ; 8, 22 March ; 12, 26 April ; 10, 24 May ; 7, 21 June ; 12 July ; 9 August ; 20 September ; 18 October.